STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 10, 2005

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Ms. Angie Pennock
NCDOT Coordinator

Dear Madam:

SUBJECT: **Nationwide 23 and 33 Permit Application** for the replacement of Bridge No. 195 over Bear Creek (Lake James Creek) on SR 1552 in McDowell County, Federal Aid Project No. BRZ-1552(8), State Project No. 8.2872001, TIP No. B-3872.

The NC Department of Transportation (NCDOT) proposes to replace the Bridge No. 195 over Bear Creek on SR 1552, with a new bridge just east of the existing structure at approximately the same elevation. Bridge No. 195 is a single lane, four span structure 80 feet long with a timber deck on steel I-beams and timber piles. The new bridge will be a two-lane structure approximately 125 feet in length and 28 feet in width. A travel way of 22 feet will be accommodated, with an offset of 3 feet on each side of the bridge. The approach roadway will consist of two 11-foot travel lanes. Grass shoulder widths will be 4 feet on each side and increased to 7 feet where guardrail is warranted. One lane of traffic will be maintained along the existing roadway during construction. Total project length will be approximately 600 feet.

IMPACTS TO WATERS OF THE UNITED STATES

The replacement of bridge No. 195 will result in temporary impacts to Waters of the United States. Impacts to Bear Creek consisting of 0.082 acre (125 linear feet) are proposed due to a temporary causeway needed for construction of the new structure. Bear Creek [DWQ Index No. 11-26-1] is located in the Catawba River Basin, in the 03050101 HUC and has a classification of C.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

IMPACTS TO CATAWBA RIVER BASIN BUFFERS

This project is located adjacent to Lake James, which is on the mainstem of the Catawba River Basin; therefore the regulations pertaining to the riparian buffer rules apply.

The construction of the new roadway approach on the south side of the bridge will impact approximately 5,096.9 square feet (910.3 ft. in zone 1, 4186.6 ft. in zone 2) of Catawba River Riparian Buffers where the roadway parallels Lake James. All buffer impacts will occur due to the necessary fill slopes for the new roadbed on the south side of the project. Compensatory mitigation is proposed for the buffer impacts.

BRIDGE DEMOLITION

Best Management Practices for Bridge Demolition and Removal will be implemented. Bridge No. 195 on SR 1552 is composed mainly of timber and steel. The substructure consists of timber piles with timber caps and concrete footings. Therefore, Bridge No. 195 can be removed without dropping components into Waters of the United States. However, if any material falls into the stream it will be removed as soon as possible as part of the bridge removal process. This bridge is classified as "Case 3" where there are no special restrictions beyond those outlined in Best Management Practices for Protection of Surface Waters.

BRIDGE CONSTRUCTION

The new structure will be a three span spill through slope bridge. The substructure will include two sets of drilled piers for the bents. The piers will be located outside the stream channel. To facilitate construction of the new bridge a temporary causeway across the creek will be constructed.

TEMPORARY CAUSEWAY

There will be 0.082 acre of temporary impacts in Bear Creek from the construction of the temporary causeway. The causeway is required for the drilling equipment that will be used for the installation of the drilled piers. Two fifty-foot long 60-inch corrugated metal pipes will be placed in the stream and covered with Class II Rip Rap to form the temporary causeway.

No permanent fill will result from the subject activity. All materials used as temporary fill in the construction of the causeway will be completely removed. The entire causeway footprint shall be returned to the original contours and elevations after the purpose of the causeway has been served. After the causeway is no longer needed, the contractor will use excavating equipment to remove all materials. The contractor will be required to submit a reclamation plan for removal of and disposal of all materials off-site.

AVOIDANCE & MINIMIZATION

Due to poor horizontal alignment, the west alternative was eliminated from further consideration. Replacement farther to the east would cause more buffer impacts and impact more of the Federal Energy Regulatory Commission (FERC) property. The new bridge will be located just east of the existing bridge. Elevation of the new bridge will be approximately

the same as the existing structure. Traffic will be maintained using one lane of traffic along the existing roadway. Piers for the new bridge will be located outside the creek channel. A retaining wall will be constructed along the southern approach to minimize impacts to riparian buffers. Best management practices (BMP's) will be utilized to minimize water quality impacts. In compliance with 15A NCAC 02B.0104(m) we have incorporated the use of BMP's in the design of the project.

MITIGATION

The Department has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The subject TIP project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The compensatory buffer mitigation for the project will be provided in accordance with Section IX, NC Ecosystem Enhancement Program (EEP) Transition Period, of the Agreement.

Since the subject project is listed in Exhibit 2, the necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act will be provided by the EEP. The offsetting mitigation will derive from an inventory of assets already in existence within the same 8-digit cataloguing unit. A copy of the EEP acceptance letter is included with this permit application.

FEDERALLY-PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under Endangered Species Act §§7 and 9. As of January 29, 2003, the US Fish and Wildlife Service (USFWS) lists 4 federally protected species for McDowell County (Table 1). A biological conclusion of "No Effect" was reached for all federally protected species for this county at this site in 2001. An additional survey was also conducted by NCDOT biologists on August 4, 2005. During this survey, no eagles or eagle nests were observed. Additionally, no potential nesting trees will be disturbed as a result of project construction. However, since the project is located adjacent to Lake James where bald eagles have been recorded, the biological conclusion for the bald eagle has been changed to "May Effect-Not Likely to Adversely Affect".

Table 1. Federally Protected Species for McDowell County

SCIENTIFIC NAME	COMMON NAME	STATUS	BIOLOGICAL CONCLUSION
Clemys muhlenbergii	Bog turtle	T (S/A)	No Effect
Haliaeetus leucocephalus	Bald Eagle	T (proposed for delisting)	May Effect-Not Likely to Adversely Affect
Hudstonia montana	Mountain golden heather	T	No Effect
Isotria medeoloides	Small-whorled pogonia	T	No Effect

STATUS:

"T" denotes Threatened (a species that is likely to become endangered species within the foreseeable future throughout all or a significant portion of its range).

"T(S/A)" denotes Threatened due to similarity of appearance (a species that is threatened due to similarity of appearance with other rare species and is listed for its protection).

REGULATORY APPROVALS

Section 404 Permit: It is anticipated that the construction of the temporary causeways will be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of a Nationwide Permit 33 authorizing construction of the causeway. All other aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR § 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification numbers 3403 and 3366 will apply to this project. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their records.

Catawba Buffer Rules: According to the Catawba Riparian Buffer Rules, bridges are allowable. Uses designated as allowable may proceed within the riparian buffer provided that there are no practical alternatives to the requested use pursuant to Sub-Item (8)(a) of the Rule. These uses require written authorization from the Division or local government with an approved riparian buffer ordinance. Therefore, NCDOT is hereby requesting written authorization for a Buffer Certification from the Division of Water Quality.

We anticipate that the Corps of Engineers will request comments from the North Carolina Wildlife Resources Commission (NCWRC) prior to authorization. By copy of this letter and attachment, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers.

A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/planning/pe/naturalunit/Permit.html.

If you have any questions or need additional information, please contact Mr. Chris Manley at (919) 715-1487 or cdmanley@dot.state.nc.us.

Sincerely,

Gregory J. Thorpe, Ph.D. Environmental Management Director,
Project Development and Environmental Analysis Branch

cc list

W/attachment
Mr. John Hennessy, NCDWQ (7 copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. J.J. Swain, P.E., Division 13 Engineer
Mr. Roger Bryan, Division 13 DEO

W/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Franklin, USACE, Wilmington
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch
Mr. William T Goodwin , P.E., Project Development Unit Head

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☒ 401 Water Quality Certification
   - ☒ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: NW 23, NW 33

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☒

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☒

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: North Carolina Department of Transportation
   Mailing Address: 1548 Mail Service Center
   Raleigh, NC 27699-1548
   Telephone Number: 919-733-3147 Fax Number: 919-766-9794
   E-mail Address: gthorpe@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: _____
   Company Affiliation: _____
   Mailing Address: _____
   Telephone Number: _____ Fax Number: _____
   E-mail Address: _____

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Bridge No. 195 on SR 1552 over Bear Creek

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3872

3. Property Identification Number (Tax PIN): _____

4. Location
   County: McDowell Nearest Town: Marion
   Subdivision name (include phase/lot number): _____
   Directions to site (include road numbers/names, landmarks, etc.): 70 West to SR 1233 to SR 1234 to Rt 126N to SR 1236 to SR 1552

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 35°45'14" °N 81°58'06" °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Bear Creek / Lake James

8. River Basin: Catawba
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Two lane paved roadway leading into a single lane bridge over Bear Creek. Adjacent land use is forest with a cove of Lake James to the east.

10. Describe the overall project in detail, including the type of equipment to be used: The existing single lane bridge will be replaced with a two lane bridge just east of the existing. Traffic will be maintained on the existing bridge during construction and the old bridge will be removed. A temporary causeway across Bear Creek will be constructed using two 60 inch culverts and rip rap. The causeway is needed to provide construction access for drilling the piers for the new bridge. Equipment will consist of typical grading machinery such as track hoes, dozers, dump trucks, and a crane for the bridge construction and new roadway approaches.

11. Explain the purpose of the proposed work: To replace a deteriorating single lane bridge with a new two lane bridge with a reduced curve providing safer travel for traffic using SR 1552.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. N/A

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application. N/A

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: Proposed impacts include 0.082 acres of temporary fill in surface waters which will temporarilly impact 125 linear feet of existing channel.

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
N/A					
Total Wetland Impact (acres)					

3. List the total acreage (estimated) of all existing wetlands on the property: N/A

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
1	Bear Creek	Temp. fill	Perennial	20	125	0.082
Total Stream Impact (by length and acreage)					125	0.082

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acre)
N/A				
Total Open Water Impact (acres)				

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.082
Wetland Impact (acres):	
Open Water Impact ($ft.^2$):	
Total Impact to Waters of the U.S. (acres)	0.082
Total Stream Impact (linear feet):	125

7. Isolated Waters
   Do any isolated waters exist on the property? ☐ Yes ☒ No
   Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

   _____

   _____

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):_____
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):_____
   Current land use in the vicinity of the pond:_____
   Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. New location to the west of the existing structure was eliminated from further consideration due to difficulty in providing horizontal alignment. Replacement farther to the east would cause more buffer impacts and impact more of the Federal Energy Regulatory Comission (FERC) property. The new bridge will be located just east of the existing bridge. Elevation of the new bridge will be approximately the same as the existing structure. Traffic will be maintained using one lane of traffic along the existing roadway. Piers for the new bridge will be located outside the creek channel. A retaining wall will be constructed along the southern approach to minimize impacts to riparian buffers. Best management practices (BMP's) will be utilized to minimize water quality impacts. In compliance with 15A NCAC 02B.0104(m) we have incorporated the use of BMP's in the design of the project.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   The North Carolina Ecosystem Enhancement Program will provide compensatory Buffer mitigation for proposed impacts resulting from project construction.

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

   Amount of stream mitigation requested (linear feet): N/A
   Amount of buffer mitigation requested (square feet): 5,096.9
   Amount of Riparian wetland mitigation requested (acres): N/A
   Amount of Non-riparian wetland mitigation requested (acres): N/A
   Amount of Coastal wetland mitigation requested (acres): N/A

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☒ No ☐

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1	910.3	3 (2 for Catawba)	1820.6
2	4186.6	1.5	6279.9
Total	5096.9		8100.5

* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260.
The North Carolina Ecosystem Enhancement Program will provide compensatory Buffer mitigation for proposed impacts resulting from project construction.

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. The proposed impervious surface area will remain approximately the same as the existing site conditions. NCDOT will use Best Management Practices for erosion control during construction.

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.
N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒
Is this an after-the-fact permit application? Yes ☐ No ☒

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:

XV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).N/A

Applicant/Agent's Signature 8/9/05 **Date**

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

Ecosystem Enhancement PROGRAM

August 3, 2005

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-3872, Bridge 195 over Bear Creek (Lake James Creek) on SR 1552, McDowell County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the required buffer mitigation for the subject project. Based on the information supplied by you in letter dated June 23, 2005, the impacts are located in CU 03050101 of the Catawba River Basin in the Northern Mountains (NM), and are as follows:

Buffer Zone 1:	910.3 square feet
Buffer Zone 2:	4,186.6 square feet

The NCDOT estimated buffer impacts in the 7-year Impact Projection Database submitted to EEP in May 2005. The buffer mitigation required for the NCDOT's impact projections was incorporated into EEP's biennial budget that was submitted to the NCDOT for approval in June 2005. However, EEP intends to continue managing all of the NCDOT's buffer mitigation requests and approvals through the In-Lieu Fee (ILF) Program's Buffer Fund. Any buffer impact associated with projects located in the Neuse, Tar-Pamlico, and portions of the Catawba River Basins are automatic acceptances by the EEP, per the agreement with the NCDWQ.

The NCDOT will be responsible to ensure that the appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWQ's Buffer Certification, the NCDOT will provide the EEP a copy of the Certification along with a letter verifying the buffer impact/mitigation amounts and

requesting a fund transfer to provide the required compensation. The EEP will transfer funds from the MOA Account (Fund 2984) into the ILF Buffer Mitigation Fund (Fund 2982). Since this expense is outside of the approved Biennial budget, the EEP will request reimbursement for the buffer mitigation on the next quarterly invoice after the transfer has occurred.

As stated in your letter, the subject project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The mitigation for the subject project will be provided in accordance with this agreement.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

William D. Gilmore, P.E.
EEP Director

cc: Ms. Angie Pennock, USACE-Asheville
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-3872

McDowell County
Bridge No. 195 on SR 1552
Over Bear Creek
Federal Project BRZ-1552(8)
WBS 33316.1.1
State Project 8.2872001
TIP No. B-3872

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

10/20/03
DATE

for Gregory J. Thorpe, PhD
Environmental Management Director, PDEA

10/23/03
DATE

for John F. Sullivan, III
Division Administrator, FHWA

PROJECT COMMITMENTS

McDowell County
Bridge No. 195 on SR 1552
Over Bear Creek
Federal Project BRZ-1552 (8)
State Project 8.2872001
TIP No. B-3872

Commitments Developed Through Project Development and Design

Roadside Environmental Unit, Division 13 Construction, Structure Design Unit
Bridge Demolition: Best Management Practices for Bridge Demolition & Removal will be implemented. The bridge is composed mainly of timber and steel. The substructure consists of timber piles with timber caps and concrete footings. Therefore, Bridge No. 195 will be removed without dropping components into Waters of the United States.

Project Development and Environmental Analysis Branch, Division 13 Construction Unit
NCDOT will coordinate with Duke Power Company regarding any requirements of the Federal Energy Regulatory Commission (FERC) regarding permits. Requirements from the FERC regarding permits must be met prior to letting.

Project Development & Environmental Analysis (Natural Resource Specialist)
Updated surveys for the Bald Eagle must be completed before this project is let for construction. A biological conclusion of No Effect was rendered in July 2001. The current let date is December 2004.

McDowell County
Bridge No. 195 on SR 1552
Over Bear Creek
Federal Project BRZ-1552 (8)
WBS 33316.1.1
State Project 8.2872001
TIP No. B-3872

INTRODUCTION: Bridge No. 195 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and is eligible for the Federal-Aid Bridge Replacement and Rehabilitation Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED

NCDOT Bridge Maintenance Unit records indicate Bridge No. 195 has a sufficiency rating of 63.6 out of a possible 100 for a new structure. This bridge is considered to be functionally obsolete. The replacement of this inadequate structure will result in safer traffic operations. This bridge had a sufficiency rating of 37.5 in March 1997. Temporary repairs were required in order for the structure to maintain traffic. The repairs resulted in an increase in the sufficiency rating.

II. EXISTING CONDITIONS

The project is located northeast of the town of Marion in McDowell County, where Bear Creek and Bailey Creek enter Lake James (see Figure 2). Development in the area is primarily residential and recreational in nature. The immediate vicinity of the bridge of is forested.

SR 1552 is classified as a Rural Local Route in the Statewide Functional Classification System and it is not a National Highway System Route. This route is not a designated bicycle route and there is no indication that an unusual number of bicyclists use this roadway.

In the vicinity of the bridge, SR 1552 has a 20-foot (6-meter) pavement width with 4-foot (1.2-meter) grass shoulders (see Figure 3). The roadway grade is fairly level with very poor horizontal alignment throughout the project limits. The existing bridge is on a tangent. The roadway is situated approximately 21 feet (6.3 meters) above the creek bed.

Bridge No. 195 is a 4-span structure that consists of a timber deck on steel I-beams with an asphalt wearing surface. The end bents and interior bents consist of timber piles and caps. Bent 2 has a concrete footing. The existing bridge (see Figure 3) was constructed in 1959. The overall length of the structure is 81 feet (24.7 meters). The clear roadway width is 15.8 feet (4.8 meters). The bridge is not posted with weight restrictions for single vehicles or truck-tractor semi-trailers.

A GTE Underground Telephone line is located along the east side of SR 1552. There is no indication this line crosses the stream. Utility impacts are considered to be low.

The current traffic volume of 200 vehicles per day (VPD) is expected to increase to 400 VPD by the year 2025. The projected volume includes 1% truck-tractor semi-trailer (TTST) and 2% dual-tired vehicles (DT). The speed limit in the vicinity of the bridge is statutory 55 mph (90 kmh).

There were no reported accidents in the vicinity of the project during a recent three year period.

According to the Transportation Director for McDowell County Schools, there are two school bus crossings per day on Bridge No. 195.

III. ALTERNATIVES

A. Project Description

The replacement structure should be of sufficient width to provide for two 11-foot (3.3-meter) lanes with 3-foot (1-meter) offsets on each side.

The roadway grade of the new structure will be approximately the same as the existing grade.

The existing roadway approaches will be widened to a 22-foot (6.6-meter) pavement width to provide two 11-foot (3.3-meter) lanes. Grass shoulder widths will be 4 feet (1.2 meters) on each side and increased to 7 feet (2.1 meters) where guardrail is warranted.

B. Reasonable and Feasible Alternatives

One alternative was carried forward for detailed study for replacing Bridge No. 195 and is described below.

Alternate 1: **(Recommended)** Replace existing bridge with a new bridge approximately 125 feet (38 meters) in length and east of the existing. Elevation of the new bridge will be approximately the same as the existing structure. One lane of traffic will be maintained along the existing roadway during construction. The design speed will be approximately 20 mph (30 kmh). A design exception will be required for the horizontal alignment.

C. Alternatives Eliminated From Further Consideration

An off-site detour is not considered to be prudent due to the lack of a suitable detour route.

The "do-nothing" alternative is not practical and will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by SR 1552.

"Rehabilitation" of the existing deteriorating bridge is neither practical nor economical.

New location to the west of the existing structure was eliminated from further consideration due to the difficulty and cost associated with providing an acceptable horizontal alignment. The mountainous terrain does not make it cost effective to pursue alternatives to the west.

Replacement farther to the east was considered, however, buffer impacts are a concern and staying out of the 1200-foot contour will decrease impacts into the Federal Energy Regulatory Commission (FERC) Property.

D. Preferred Alternative

As recommended in Alternate 1, Bridge No. 195 will be replaced with a new bridge to the east at approximately the same elevation as the existing bridge. This alternate is recommended because it provides the most economic design while minimizing impacts.

Traffic will be maintained along the existing roadway. Total project length will be approximately 600 feet (183 meters). Based on preliminary design, the design speed should be approximately 20 mph (30 kmh). A design exception will be required for the horizontal alignment.

IV. ESTIMATED COSTS

The estimated costs for the alternate are as follows:

	Alternate 1 (Recommended)
Structure	$ 306,000
Roadway Approaches	$ 125,000
Structure Removal	$ 11,000
Detour, Approaches & Removal	$ 0
Eng. & Contingencies	$ 72,000
Mobilization & Misc.	$ 61,000
Total Construction Costs	$ 575,000
Right-Of-Way Costs	$ 40,000
Total Project Cost	**$ 615,000**

V. NATURAL RESOURCES

PHYSICAL RESOURCES

Soil and water resources, which occur in the study area, are discussed below. Soils and availability of water directly influence composition and distribution of flora and fauna in biotic communities.

Regional Characteristics

The project study area lies within the east-central portion of McDowell County in the Blue Ridge Mountain major land resource area. The topography in this section of McDowell County consists of strongly sloping to very steep uplands. Topography in the project area is sloping with an elevation of approximately 1,240 feet (378 meters) above mean sea level. Land use in this area consists primarily of forested land characterized by rolling hills and the project is adjacent to Pisgah National Forest. The bridge replacement project is located where Bear Creek enters Lake James. This lake is owned by Duke Energy and is used for generation of hydroelectric power and for recreation.

Soils

Three soil types are mapped for the project study area and are described in Table 2. There are no hydric soils mapped within the project study area and Colvard loam is occasionally flooded for very brief periods.

Table 2. Soils in Project Area, McDowell County

Soil phase	Location	Seasonal high water table	Soil drainage/ permeability	Hydric Soil?
Colvard loam 0 – 2% slopes, occasionally flooded (**CoA**)	Parallels Bear Creek (in general, occurs on floodplains and along small streams)	4 – 6 ft below the surface	Very deep, well drained/ moderately rapid	no
Lonon-Northcove complex, 6 – 15% slopes (**LnC**)	Parallels the road on the north (in general, occurs on side slopes between drainage-ways and adjacent to intermittent streams)	Greater than 6 ft below the surface	Very deep, well drained/ moderate to moderately rapid	no
Evard-Cowee complex, 25 – 60% slopes (**Ewe**)	Found on steep slopes on the southeastern and southwestern portion of project	Greater than 6 ft below the surface	Very deep, well drained moderate permeability	no

Soils throughout the project site contained bright chromas indicating non-hydric conditions. Soils and hydrologic indicators were not present on the project site, therefore, wetlands, as

defined in the "Corps of Engineers Wetland Delineation Manual", 1987, were not observed within the project study area.

Water Resources

This section contains information concerning those water resources likely to be impacted by the project. Water resource information encompasses physical aspects of the resource, its relationship to major water systems, Best Usage Standards and water quality of the resources. Probable impacts to these water bodies are also discussed, as are means to minimize impacts.

Best Usage Classification

The Division of Water Quality assigns streams a best usage classification based upon their intended uses. A Best Usage classification of "C" is assigned to Bear Creek. The "C" classification denotes waters protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture and other uses suitable for "Class C" waters. Secondary recreation involves human body contact with water where such activities take place in an infrequent manner. Lake James, into which Bear Creek flows, is a water supply and is classified as WS-V B as of 4/1/99. There are no waters classified as High Quality Waters (HQW), Water Supplies-I or II (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds) or Outstanding Resource Waters (ORW) within 1.0 mile (1.6 km) of the project study area.

Physical Characteristics of Surface Waters

Bear Creek [DWQ Index no. 11-26-1] is the only surface water directly affected by the proposed project and occurs in subbasin 03-08-30 of the Catawba River Basin. Bear Creek is backed up due to lake influence and is lake-like on the eastern side of the bridge where the proposed bridge will be relocated. This creek is approximately 25 feet (8 meters) wide with variable depth at this location. Bear Creek originates approximately 2.5 miles (4 km) upstream in the Pisgah Forest before it enters Lake James.

Water Quality

The Division of Water Quality has initiated a basinwide approach to water quality management for the 17 river basins within the state. The basinwide approach allows for more intensive sampling of biological, chemical, and physical data that can be used in basinwide assessment and planning. Likewise, benthic macroinvertebrates are intensively sampled for specific river basins. Benthic macroinvertebrates have proven to be a good indicator of water quality because they are sensitive to subtle changes in water quality, have a relatively long life cycle, are non-mobile (compared to fish) and are extremely diverse. The overall species richness and presence of indicator organisms help to assess the health of streams and rivers. River basins are reassessed every five years to detect changes in water quality and to facilitate National Pollutant Discharge Elimination System (NPDES) permit review.

Bear Creek has not been sampled by the DWQ for benthic macroinvertebrates. However, within a mile of the project site, downstream of Bear Creek in Lake James, the DWQ monitors an ambient water quality station. The Ambient Monitoring System (AMS) is a network of stream, lake and estuarine water quality monitoring stations strategically located for the collection of physical and chemical water quality data. The classification (freshwater or saltwater) of a waterbody and corresponding water quality standards determine the type of water quality data or parameters that are collected. Water quality in this lake is good and trophic status has been determined to be 'oligotrophic' or nutrient poor, indicating that organic enrichment is not a problem with this lake.

Point source dischargers located throughout North Carolina are permitted through the NPDES Program. Dischargers are required to register for a permit. There are no point source dischargers located within a 1.0 mile (1.6 km) radius of the project study area.

Summary of Anticipated Impacts

Impacts to surface waters are anticipated as a result of construction activities. This may include scouring of the streambed, siltation, runoff of toxic substances, and damage to the stream banks. Limiting earth removal, vegetation removal, and in-stream activities best minimizes impacts to surface waters. NCDOT's Best Management Practices for the Protection of Surface Waters and Sedimentation Control Guidelines must be enforced during the construction stage of the project. Utilizing the full ROW width of 80 feet (24.4 meters) anticipated impacts to Bear Creek will be 80 feet. Usually, project construction does not require the entire ROW, and the river will be bridged, therefore, actual impacts may be considerably less.

Bridge Demolition and Removal

Bridge No. 195 on SR 1552 is composed mainly of timber and steel. The substructure consists of timber piles with timber caps and concrete footings. Therefore, Bridge No. 195 will be removed without dropping components into Waters of the United States. This bridge is classified as "Case 3" where there are no special restrictions beyond those outlined in Best Management Practices for Protection of Surface Waters.

BIOTIC RESOURCES

Biotic resources include aquatic and terrestrial ecosystems. This section describes those ecosystems encountered in the study area, as well as the relationships between fauna and flora within these ecosystems. Composition and distribution of biotic communities throughout the project area are reflective of topography, hydrologic influences and past and present land uses in the study area. Descriptions of the terrestrial systems are presented in the context of plant community classifications. These classifications follow descriptions presented by Schafale and Weakley (1990) where possible. Dominant flora and fauna observed, or likely to occur, in each community are described and discussed.

Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Plant taxonomy generally follows Radford, et al. (1968). Animal taxonomy follows Martof, et al. (1980), Menhinick (1991), Potter, et al. (1980), and Webster, et al. (1985). Subsequent references to the same organism will include the common name only. Fauna observed during the site visit are denoted by an asterisk (*). Published range distributions and habitat analysis are used in estimating fauna expected to be present within the project area.

Biotic communities

Three communities are found within the project boundaries: maintained/disturbed, piedmont/low mountain alluvial forest and mountain stream/arm of lake. Community boundaries within the study area are fairly well defined and terrestrial fauna likely to occur within the study area may exploit all communities for shelter and foraging opportunities or as movement corridors.

Disturbed/maintained roadside community

The maintained/disturbed community occurs at the roadside shoulders along the length of the approaches within the project study area. In addition to various grasses, typical weedy roadside species including honeysuckle (*Lonicera japonica*), sericea (*Lespedeza cuneata*) and vetch (*Vicia* sp.) are found on road shoulders. Downstream of the bridge, on the northwest portion of the project, the road shoulder drops off sharply and a steep hillside is present down to the lake. The steep, hillside occupies little area and had been disturbed as a result of prior road construction, therefore it is included in this community type. Roadside and hillside trees include chestnut oak (*Quercus prinus*), mockernut hickory (*Carya tomentosa*), sweet birch (*Betula lenta*), catalpa (*Catalpa speciosa*) and red maple (*Acer rubrum*). Understory shrubs such as hydrangea (*Hydrangea* sp.), sweet shrub (*Calycanthus floridus*) and multiflora rose (*Rosa multiflora*) are also present.

Piedmont/Low Mountain Alluvial Forest

The piedmont/low mountain alluvial forest community is found in the northeastern quadrant of the project where much of the new bridge approach will be shifted. This community consists of low woods that may be intermittently flooded when lake levels are backed up above normal pool levels. Included in this community is a zone of vegetation that occurs where lake levels stabilize most frequently. Vegetation adjacent to the lake includes river birch (*Betula nigra*), black willow (*Salix nigra*), tag alder (*Alnus serrulata*), swamp rose (*Rosa palustris*), and silky dogwood (*Cornus amomum*). The herbaceous plants, false nettle (*Boehmeria cylindrica*), jewelweed (*Impatiens capensis*) and cardinal flower (*Lobelia cardinalis*) are found along the perimeter of the lake arm.

Canopy trees along the new alignment include tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), sycamore (*Platanus occidentalis*), and several species of pine (Virginia pine – *Pinus virginiana*, shortleaf pine – *Pinus echinata* and white pine - *Pinus strobus*). Understory trees and shrubs consisted of flowering dogwood (*Cornus*

florida), black cherry (*Prunus serotina*), hemlock (*Tsuga canadensis*), American holly (*Ilex opaca*) and saplings of the canopy trees.

Ground vegetation consists predominately of smilax (*Smilax* sp.), poison ivy (*Toxicodendron radicans*), yellowroot (*Xanthorhiza simplicissima*), *aster (Aster divericatus*), golden ragwort (*Senecio aureus*) and Christmas fern (*Polystichum acrostichoides*).

Mountain stream/arm of lake

Although the upper reach of Bear Creek is considered a mountain stream, at the project study area, Bear Creek retains lake-like characteristics as it is backed up and flow is not discernible. During the site visits, Bear Creek was approximately 25 feet (8 meters) wide where the new bridge is to be constructed. Bottom substrate includes sand, gravel, and cobble. Water clarity of Lake James is generally good and at the water's edge, a branched macroalga, *Chara*, a stonewort, which has a preference for clear waters, is found growing in abundance.

Wildlife

The physical characteristics of the terrestrial and aquatic communities in an area will affect the fauna that are present and use the area. This section addresses the fauna likely to be found in the project study area.

Terrestrial Fauna

Mammalian fauna likely to occur throughout these communities includes Virginia opossum (*Didelphis virginiana*), muskrat (*Ondatra zibethicus*), raccoon* (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*) and gray fox (*Urocyon cineroargenteus*). Reptiles and amphibians common in this area include eastern newt (*Notophthalmus viridescens*), which is terrestrial as a sub-adult (eft), American toad (*Bufo americanus*), spring peeper (*Hyla crucifer*), bullfrog (*Rana catesbeiana*), eastern box turtle (*Terrapene carolina*) and rat snake (*Elaphe obsoleta*).

Avian fauna likely to occur in this area includes permanent residents such as gray catbird* (*Dumtella carolinensis*), northern cardinal* (*Cardinalis cardinalis*), goldfinch* (*Carduelis tristis*), eastern phoebe* (*Sayornis phoebe*), chickadee* (*Parus carolinensis*), tufted titmouse* (*Parus bicolor*), Carolina wren* (*Thryothorus ludovicianus*), pine warbler* (*Dendroica pinus*) and pileated woodpecker* (*Dryocopus pileatus*). Migratory species that may use the area for feeding and nesting include red-eyed vireo* (*Vireo olivaceous*), yellow warbler* *(Dendroica petechia*) and other various species of warblers. Wild turkeys* (*Meleagris gallopavo*) (as well as turkey hunters) were observed during the site visit.

Aquatic Fauna

Common fish that may reside in the Bear Creek arm of Lake James include bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), gizzard shad (*Dorosoma*

cepedianum), channel catfish (*Ictalurus* punctatus) and carp (*Cyprinius carpio*). Crayfish (family: Cambaridae) and their chimneys were observed near the lake edge.

Summary of Anticipated Impacts

Calculated impacts to terrestrial resources reflect the relative abundance of each community present within the study area. Project construction may result in clearing and degradation of portions of these communities. Table 3 summarizes potential quantitative losses to these communities, resulting from project construction. Estimated impacts are derived using the entire proposed ROW for new location and excluding areas under pavement for impact calculations. Usually, project construction does not require the entire ROW; therefore, actual impacts may be considerably less.

Table 3. Anticipated Impacts to Terrestrial Communities

Community type	Alternate 1
Maintained/disturbed	0.37 (0.15)
Piedmont/low mountain alluvial forest	0.23 (0.09)
Total Impacts	0.60 (0.24)

Values cited are in acres (hectares).

Plant communities found within the proposed project area serve as nesting and sheltering habitat for various wildlife. Replacing Bridge No. 195 may reduce habitat for faunal species, thereby diminishing faunal numbers on a temporary basis. However, due to the size and scope of this project, it is anticipated that impacts to fauna will be minimal.

Areas modified by construction (but not paved) will become road shoulders and early successional habitat. Reduced habitat will displace some wildlife further from the roadway while attracting other wildlife by the creation of more early successional habitat. Animals temporarily displaced by construction activities will repopulate areas suitable for the species.

Aquatic communities are sensitive to small changes in their environment. Although direct impacts may be temporary, environmental impacts from these construction processes may result in long term or irreversible effects. Impacts often associated with in-stream construction include increased channelization and scouring of the streambed. In-stream construction alters the stream substrate and may remove streamside vegetation at the site. Disturbances to the substrate will produce siltation, which clogs the gills and/or feeding mechanisms of benthic organisms (sessile filter-feeders and deposit- feeders), fish and amphibian species. Benthic organisms can also be covered by excessive amounts of sediment. These organisms are slow to recover or repopulate a stream.

The removal of streamside vegetation and placement of fill material at the construction site alters the terrain. Alteration of the streambank enhances the likelihood of erosion and sedimentation. Revegetation stabilizes and holds the soil thus mitigating these processes. Erosion and sedimentation carry soils, toxic compounds and other materials into aquatic communities at the construction site. These processes magnify turbidity and can cause the

formation of sandbars at the site and downstream, thereby altering water flow and the growth of vegetation. Streamside alterations also lead to more direct sunlight penetration and to elevation of water temperatures, which may impact many species.

JURISDICTIONAL TOPICS

This section provides descriptions, inventories and impact analysis pertinent to two important issues – waters of the United States and rare and protected species.

Waters of the United States

Surface waters and wetlands fall under the broad category of "Waters of the United States," as defined in Section 33 of the Code of Federal Register (CFR) Section 328.3(a). Wetlands, defined in 33 CFR Section 328.3(b), are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Any action that proposes to place fill into these areas falls under the jurisdiction of the U.S. Army Corps of Engineers (USACE), and must follow the statutory provisions under Section 404 of the Clean Water Act (33 U.S.C. 1344).

Characteristics of Wetlands and Surface Waters

Criteria to determine the presence of jurisdictional wetlands include evidence of hydric soils, hydrophytic vegetation and hydrology. The alluvial forest in the northeastern quadrant of the project area was examined for wetland characteristics. While hydrophytic vegetation was present, hydrologic indicators and hydric soils were absent. Bright, high chroma soils were present on the project site. Based on these criteria, jurisdictional wetlands are not present within the project boundaries.

Bear Creek is a jurisdictional surface water under Section 404 of the Clean Water Act (33 U.S.C. 1344). Discussion of the biological, physical, and water quality aspects of this creek are presented in previous sections of this report.

Summary of Anticipated Impacts

The anticipated total impact to surface waters from the proposed project is 80 linear feet (24 linear meters) which is derived by using the entire proposed ROW width. Usually, project construction does not require the entire ROW; and since this area on new location will be bridged, actual surface water impacts may be considerably less.

In addition, as previously mentioned, there is not potential for components of the bridge to be dropped into Waters of the United States. However, NCDOT's Best Management Practices for Bridge Demolition and Removal (BMP-BDR) must be applied for the removal of this bridge. According to NC Wildlife Resources Commission, this project will not require a moratorium.

Permits

Impacts to jurisdictional surface waters are anticipated. In accordance with provisions of Section 404 of the Clean Water Act, a permit will be required from the USACE for the discharge of dredged or fill material into "Waters of the United States."

A Section 404 Nationwide 23 Permit is likely to be applicable for all impacts to Waters of the United States from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded or financed in whole, or part, by another Federal agency or department where that agency or department has determined that pursuant to the Council on Environmental Quality Regulation for implementing the procedural provisions of the National Environmental Policy Act:

(1) that the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and;

(2) that the office of the Chief of Engineers has been furnished notice of the agency or department's application for the categorical exclusion and concurs with that determination.

A North Carolina Division of Water Quality Section 401 Water Quality Certification is required prior to the issuance of the Section 404 permit. This project will also be affected by the Catawba Riparian Buffer Rules, which are applicable to manipulations occurring on buffer zones within the mainstem Catawba lakes from Lake James and downstream. These rules were temporarily adopted effective June 30, 2001. In the rules, statute 15A NCAC 2B .0243, decrees that bridges are deemed allowable. Uses designated as "allowable" may proceed within the riparian buffer provided that there are no practical alternatives to the requested use. In addition, these uses require written authorization from the DWQ. The project must minimize impacts to buffers and comply with the Catawba Riparian Buffer Rules. Buffer mitigation for use with future projects could be acquired by restoring and replanting the approach where the current bridge is located.

Avoidance, Minimization and Mitigation

The COE has adopted, through the Council on Environmental Quality (CEQ), a wetland and stream mitigation policy which embraces the concept of "no net loss" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological and physical integrity of Waters of the United States. Mitigation has been defined by the CEQ to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts (40 CFR Section 1508.20). Each of these three aspects (avoidance, minimization and compensatory mitigation) must be considered sequentially.

The concept of 'avoidance' examines all appropriate and practicable possibilities of averting impacts to Waters of the United States. A 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the COE states that in determining "appropriate and practicable" measures to offset unavoidable impacts, such measures should

be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology and logistics in light of overall project purposes.

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction of median widths, ROW widths, fill slopes and/or road shoulder widths. Other practical mechanisms to minimize impacts to Waters of the United States crossed by the proposed project include: strict enforcement of sedimentation control BMPs for the protection of surface waters during the entire life of the project; reduction of clearing and grubbing activity; reduction/elimination of direct discharge into streams; reduction of runoff velocity; re-establishment of vegetation on exposed areas, judicious pesticide and herbicide usage; minimization of "in-stream" activity; and litter/debris control.

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that "no net loss" of functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation and enhancement of Waters of the United States. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site.

Rare and Protected Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to coexist with human activities. Federal law (under the provisions of the Endangered Species Act of 1973, as amended) requires that any action, likely to adversely affect a species classified as federally-protected, be subject to review by the United States Fish and Wildlife Service. Other species may receive additional protection under separate state laws.

Federally-Protected Species

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended. As of February 24, 2003, there are four Federally Protected Species for McDowell County (Table 4).

Table 4. Federally Protected Species for McDowell County

SCIENTIFIC NAME	COMMON NAME	STATUS
Clemmys muhlenbergii	Bog turtle	Threatened (due to similarity of appearance)
Haliaeetus leucocephalus	Bald eagle	Threatened (proposed for de-listing)
Hudstonia montana	mountain golden heather	Threatened
Isotria medeoloides	small whorled pogonia	Threatened

Threatened -- a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Threatened due to similarity of appearance -- (e.g., American alligator)--a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened and are not subject to Section consultation.

Clemmys muhlenbergi (bog turtle)
Threatened Due to Similarity of Appearance (southern population)
Animal Family: Emydidae
Date Listed: June 4, 1987

The bog turtle is a small semi-aquatic reptile, measuring 3.0 – 4.5 inches (7.5-11.4 cm) in length, with a weakly keeled, dark brown carapace and a blackish plastron with lighter markings along the midline. There is a conspicuous orange or yellow blotch on each side of the head. This species exhibits sexual dimorphism; the males have concave plastrons and longer, thicker tails, while females have flat plastrons and shorter tails.

The bog turtle is found in the eastern United States, in two distinct regions. The northern population, in Massachusetts, Connecticut, southern New York, New Jersey, Pennsylvania, Maryland, and Delaware is listed as Threatened and protected by the Endangered Species Act. The southern population, occurring in Virginia, North Carolina, South Carolina, Tennessee, and Georgia is listed as Threatened Due to Similarity of Appearance.

Preferred bog turtle habitat consists of fens, sphagnum bogs, swamps, marshy meadows and pastures. Areas with clear, slow-flowing water, soft mud substrate, and an open canopy are ideal. Clumps of vegetation such as tussock sedge and sphagnum moss are important for nesting and basking. This species hibernates from October to April, hiding just under the frozen surface of mud. The diet consists of beetles, moth and butterfly larvae, caddisfly larvae, snails, nematodes, millipedes, seeds, and carrion.

The primary threats to the bog turtle are loss of habitat (from increased residential and commercial development as well as draining, clearing, and filling wetlands) and illegal collecting for the pet trade. Nest predation and disease may also play a role in the population decrease.

This species is listed as Threatened Due to Similarity of Appearance, and is therefore not protected under Section 7 of the Endangered Species Act. However, in order to control the illegal trade of individuals from the protected northern population, federal regulations are maintained on the commercial trade of all bog turtles. No survey is required for this species.

Haliaeetus leucocephalus (bald eagle)
Threatened
Animal Family: Accipitridae
Date Listed: March 11, 1967

Bald eagles are found in North America from Florida to Alaska. The only major nesting population in the southeast is in Florida; other nesting occurs in coastal areas of Louisiana, Mississippi, and South Carolina. Migrants and rare nesting pairs do occur elsewhere in the southeast.

Adult bald eagles can be identified by their large white head and short white tail. The body plumage is dark-brown to chocolate- brown in color. Immature eagles lack the white head plumage; the body plumage has a uniform brownish to blackish color with blotchy white on the underside of the wings, belly, and tail. In flight, bald eagles can be identified by their flat wing soar. Adults range is length from 2 - 3 feet (60-90 cm) and have a wingspan ranging from 6 - 7 feet (183 - 213 cm).

There are several factors that affect an eagle's selection of a nest site. Eagle nests are found in close proximity to water (within a half mile) with a clear flight path to the water, in the largest living tree in an area, and having an open view of the surrounding land. Human disturbance can cause an eagle to abandon otherwise suitable habitat. Eagle nests are approximately 3 meters across.

The breeding season for the bald eagle begins in December or January. Fish are the major food source for bald eagles. Other sources include coots, herons, and wounded ducks. Food may be live or carrion.

BIOLOGICAL CONCLUSION **NO EFFECT**

Suitable nesting habitat such as open waters or tall trees does occur within the project area. During site visits on April 20 and June 7, 2001 the area was surveyed for bald eagles and their nests. No individuals or nests were spotted. A known bald eagle nest is located approximately 7.5 miles (12.1 km) east of the project (B-3872) site. This nest is located in a tree on the edge of Lake James. A review of the NC Natural Heritage Program database of rare species and unique habitats in November 2000 and July 2001 did not indicate known occurrences of nesting bald eagles in this vicinity. It can be concluded that the proposed bridge replacement will not affect the bald eagle.

Hudsonia montana (mountain golden heather)
Threatened
Plant Family: Cistaceae
Federally Listed: October 20, 1980
Flowers Present: mid to late June

Mountain golden heather is a low, needle-leaved shrub that is yellow-green in color. This shrub usually grows in clumps and retains its leaves from the previous year which appear scale-like on the older branches. Leaves appear awl-shaped and thread-like. Mountain golden heather forms solitary, terminal, lanceolate flowers. These yellow flowers have five blunt-tipped petals and 20 to 30 stamens. Fruit capsules have three projecting points at the tips and are round in shape.

Hudsonia montana occurs in weathered rocky soils on mountain tops, with known populations found at elevations of 2,800 to 4,000 feet (850 to 1200 meters). It can be found on exposed quartzite ledges in an ecotone between bare rock and heath balds dominated by *Leiophyllum* which merge into pine forest. Plants do live in partially shaded areas, but do not appear to be as healthy as those found in open areas. A critical habitat area for mountain golden heather exists in Burke County.

BIOLOGICAL CONCLUSION **NO EFFECT**

Suitable habitat for *Hudsonia montana* such as mountain tops and heath balds does not exist within the project area. Project elevation of the site is lower than that at which this plant typically occurs. Furthermore, no plants of mountain golden heather were observed on June 7, 2001. It can be concluded that this project will not affect mountain golden heather.

Isotria medeoloides (small whorled pogonia)
Threatened
Plant Family: Orchidaceae
Federally Listed: September 10, 1982
Flowers Present: mid May-mid June

Small whorled pogonia is a perennial orchid having long pubescent roots and a hollow stem. Stems terminate in a whorl of five or six light green, elliptical leaves that are somewhat pointed. One or two light green flowers are produced at the end of the stem. Flowers of small-whorled pogonia have short sepals.

The small whorled pogonia grows in second growth deciduous or deciduous-coniferous forests, with an open canopy, open shrub layer, and sparse herb layer. This plant prefers acidic soils. Flowering is inhibited in areas where there is relatively high shrub coverage or high sapling density.

BIOLOGICAL CONCLUSION **NO EFFECT**

Typical habitat such as second growth or deciduous coniferous forest does not exist within the project study area. This area was surveyed on June 7, 2001 for protected species and there were no plants of small whorled pogonia present. In addition, The NC Natural Heritage Program database of rare and unique habitats does not contain records for this species in this area. Therefore, the bridge replacement project will not impact small whorled pogonia.

Federal Species of Concern and State Listed Species

There are thirteen Federal Species of Concern (FSC) listed for McDowell County as of March 22, 2001. Federal Species of Concern are not afforded federal protection under the ESA and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Federal Species of Concern are defined as those species that may or may not be listed in the future. These species were formerly candidate species, or species under consideration for listing for which there was insufficient information to support a listing of Endangered, Threatened, Proposed Endangered and Proposed Threatened. Organisms which are listed as Endangered, Threatened, or Special Concern by the North Carolina Natural Heritage Program list of rare plant and animal species are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979.

Table 5 lists Federal Species of Concern, the species state status and the presence of suitable habitat for each species in the study area. This species list is provided for informational purposes as the status of these species may be upgraded in the future.

Table 5. Federal Species of Concern for McDowell County

Scientific Name	Common Name	State Status	Habitat
Contopus borealis	Olive-sided flycatcher	SC	no
Dendroica cerulea	Cerulean warbler	SR	no
Neotoma floridana haematoreia	Southern Appalachian woodrat	**SC***	no
Neotoma magister	Alleghany woodrat	SC	no
Caecidotea carolinensis	Bennett's Mill Cave water slater	SR/PE	no
Speyeria diana	Diana fritillary butterfly	**SR**	no
Carex roanenis	Roan sedge	C	no
Delphinium exaltatum	Tall larkspur	E-SC **	no
Hymenocallis coronaria	Rocky shoal spider lily	W3	no
Juglans cinerea	Butternut	W5	no
Lilium grayi	Gray's lily	T-SC	no
Monotropsis odorata	Sweet pinesap	C	no
Shortia galacifolia var. brevistyla	Northern oconee-bells	E-SC	no

- "T"--A Threatened species is one which is likely to become endangered species within the foreseeable future throughout all or a significant portion of its range.
- "E"--An Endangered species is one whose continued existence as a viable component of the State's flora (plants) is determined to be in jeopardy or a native wild animal whose continued

existence as a viable component of the State's fauna is determined by the WRC to be in jeopardy or endangered pursuant to the Endangered Species Act.

- "SC"--A Special Concern species is one which requires monitoring but may be taken or collected and sold under regulations adopted under the provisions of Article 25 of Chapter 113 of the General Statutes (animals) and the Plant Protection and Conservation Act (plants). Only propagated material may be sold of Special Concern plants that are also listed as Threatened or Endangered.
- "C"--A Candidate species is one which is very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction, direct exploitation or disease. The species is also either rare throughout its range or disjunct in North Carolina from a main range in a different part of the country or the world.
- "SR"--A Significantly Rare species is one which is very rare in North Carolina, generally with 1-20 populations in the state, generally substantially reduced in numbers by habitat destruction, direct exploitation or disease. The species is generally more common elsewhere in its range, occurring peripherally in North Carolina.
- "W1"--A Watch Category 1 species is a rare species whose status in North Carolina is relatively well known and which appears to be relatively secure at this time.
- "W2"--A Watch Category 2 species is a rare to uncommon species in North Carolina, but is not necessarily declining or in trouble.
- "W3"--A Watch Category 3 species is a species which is poorly known in North Carolina, but is not necessarily considered to be declining.
- "W5"--A Watch Category 5 species is a species with increasing amounts of threats to its habitat; populations may or may not be known to be declining.
- "/P_"--denotes a species which has been formally proposed for listing as Endangered, Threatened, or Special Concern, but has not yet completed the listing process.
- -- Historic record - the species was last observed in the county more than 50 years ago.
- ** -- Obscure record - the date and/or location of observation is uncertain.

Surveys for these species were not conducted during the site visit, nor were any of these species incidentally observed. A review of the NC Natural Heritage Program database of rare species and unique habitats (November 2000, July 2001) revealed no records of Federal Species of Concern in or near the project study area.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at Title 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council a reasonable opportunity to comment on such undertakings.

B. Historic Architecture

The State Historic Preservation Office (SHPO) reviewed the subject project and there are no known properties of architectural significance within the proposed project area. The HPO concurs that this project is not likely to affect any resources of historical significance (see letter dated February 14, 2001).

C. Archaeology

The State Historic Preservation Office (SHPO) reviewed the subject project. One known archaeological site, 31MC2 was surveyed. During the course of the survey, the site was relocated. No further archaeological investigation is required, nor is the site eligible for inclusion in the National Register of Historic Places (see letter dated October 11, 2001).

VII. GENERAL ENVIRONMENTAL EFFECTS

This project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

This project is considered to be a "Categorical Exclusion" due to its limited scope and insignificant environmental consequences.

This bridge replacement will not have a substantial adverse effect on the quality of the human or natural environment by implementing the environmental commitments listed on the Project Commitments Sheet (Green Sheet) of this document in addition to use of current NCDOT standards and specifications.

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from construction of this project.

No adverse effect on families or communities is anticipated. Right-of-way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

No adverse effect on public facilities or services is expected. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

The Farmland Protection Policy Act requires all federal agencies or their representatives to consider the potential impact to prime farmland of all land acquisition and construction projects. There are no soils classified as prime, unique, or having state or local importance in the vicinity of the project. Therefore, the project will not involve the direct conversion of farmland acreage within these classifications.

The project is an air quality "neutral" project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520.

Noise levels could increase during construction but will be temporary. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulation (CFR), Part 772 and no additional report is required.

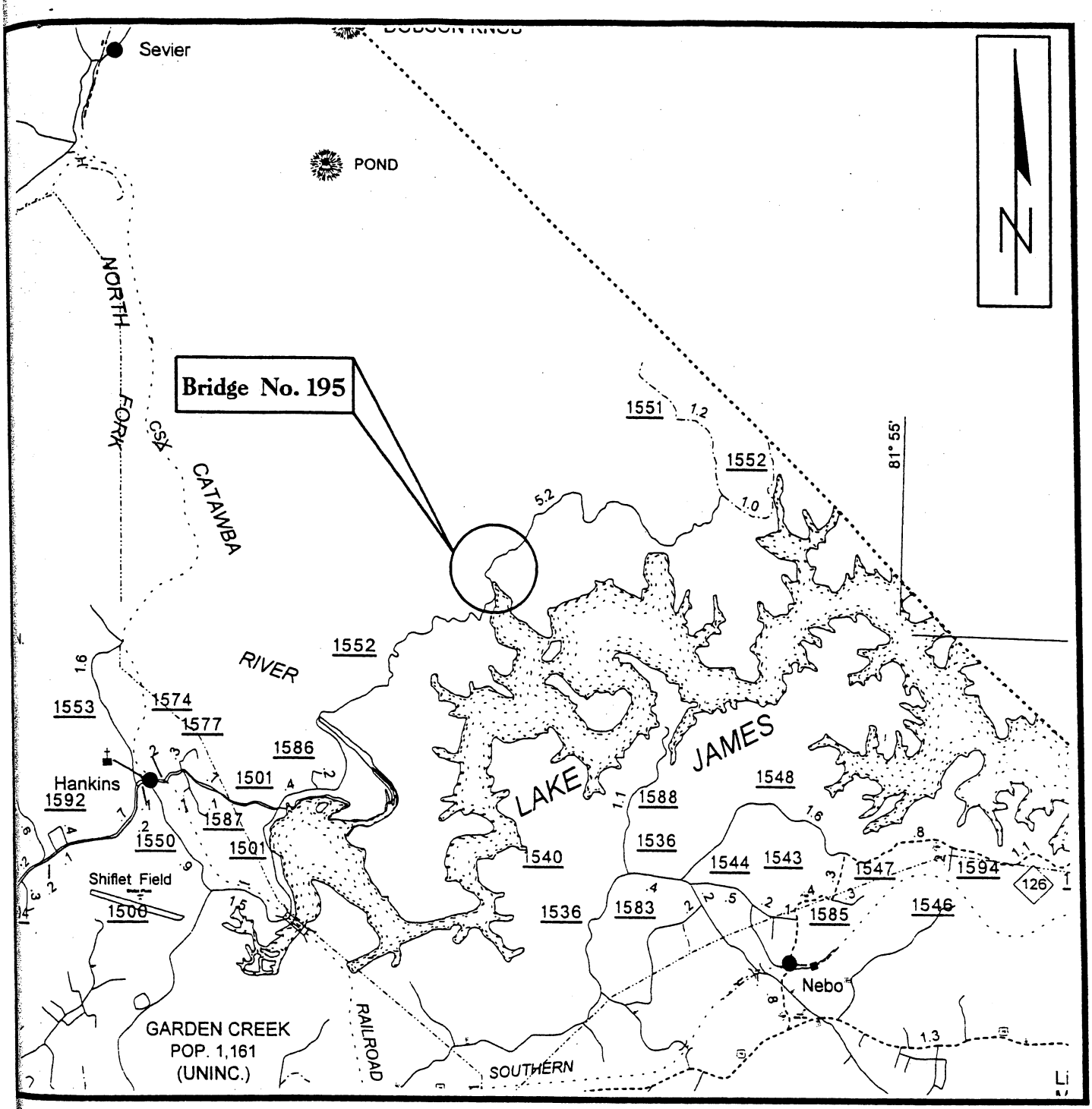
A field reconnaissance survey by NCDOT's Geotechnical Engineering Unit revealed no regulated underground storage tanks or hazardous waste sites in the project area.

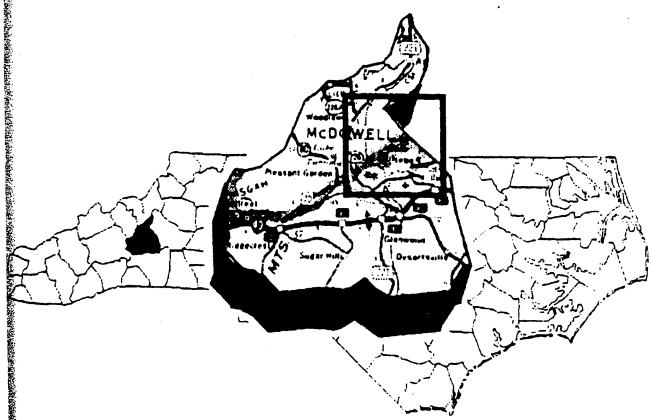
The proposed bridge replacement project will not raise the existing flood levels or have any significant adverse effect on the existing floodplain.

VII. AGENCY COMMENTS

North Carolina Division of Water Quality (NCDWQ)
Treatment of stormwater should be taken into consideration and no deck drains will be allowed to discharge water into Bear Creek.

Duke Power
The boundary of the Energy Plant is the 1200-foot contour, which is considered full pond for Lake James. Since NCDOT is encroaching (crossing over) Duke Power Property, a Federal Energy Regulation Commission (FERC) Application must be submitted. Coordination has begun between NCDOT and Duke Power. Requirements from the FERC regarding permits must be met prior to letting.





NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH

McDOWELL COUNTY
REPLACE BRIDGE NO. 195 ON SR 1552
OVER BEAR CREEK
B-3872

Figure 1

Lake James

Bailey Creek

(RECOMMENDED)
Alternate 1

Retaining Wall

SR 1552 – Lake James Rd

Bridge No. 195

Bear Creek

N

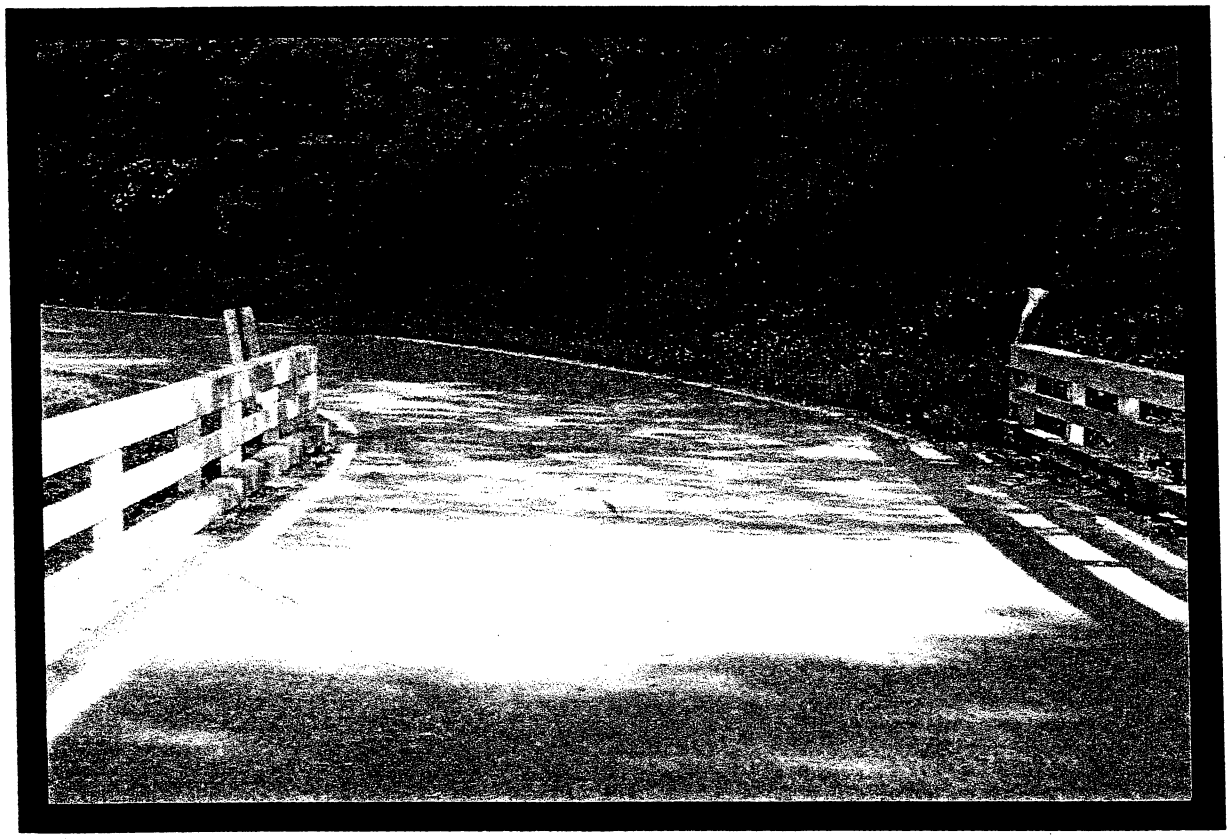
North Carolina
Department of Transportation
Division of Highways
Project Development &
Environmental Analysis Branch

McDowell County
Replace Bridge No. 195 on SR 1552
Over Bear Creek
B-3872

Scale 1":100'

Figure 2

Looking North from the Bridge



Looking South from the Bridge

B-3872

FIGURE 3A

East Face of Bridge

B-3872

FIGURE 3B

Typical Sections

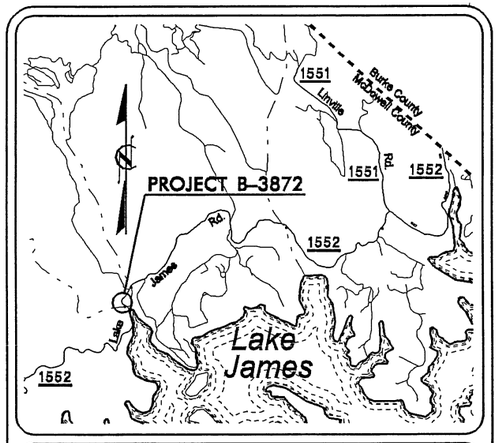
B-3872

FIGURE 4

09/08/99

TIP PROJECT: B-3872

CONTRACT: _____



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

McDOWELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3872	1	8
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
33316.1.1	BRZ-1552(8)	P.E.	

LOCATION: BRIDGE No. 195 ON SR 1552 OVER BEAR CREEK

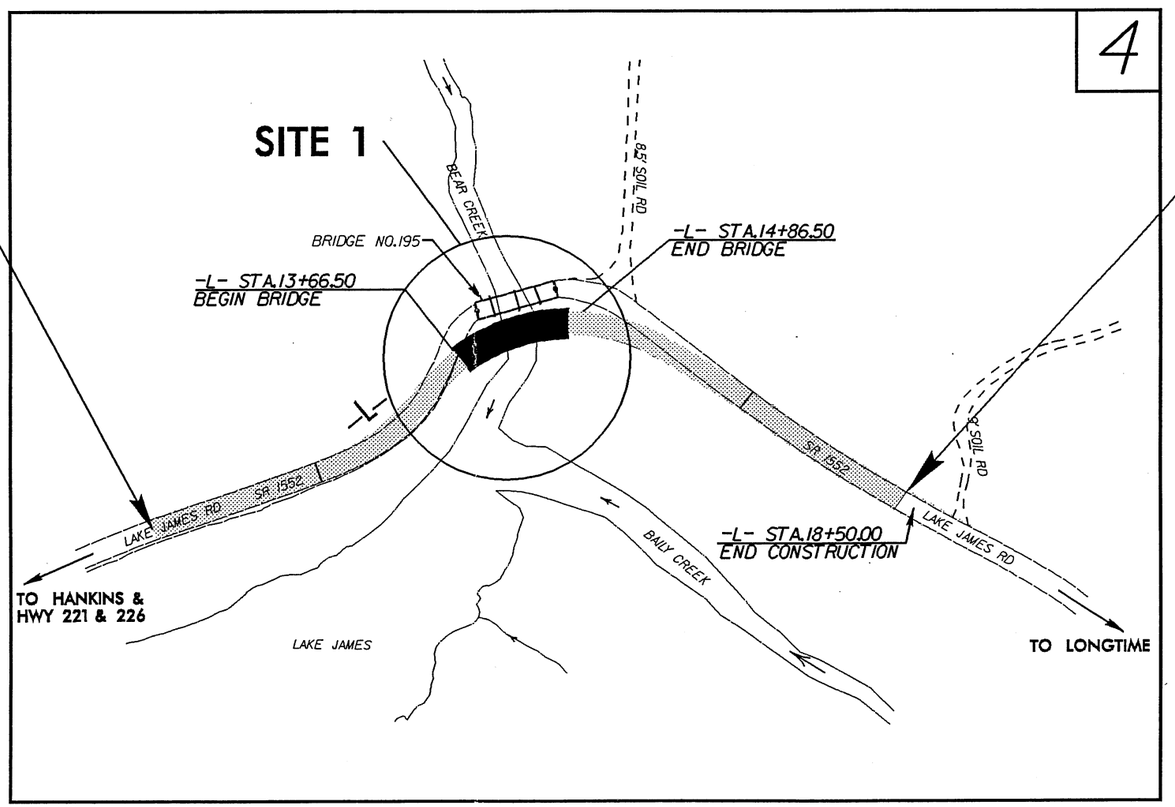
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

WETLAND/STREAM IMPACT SHEETS

NAD 83/95

STA. 10+00.00 –L– BEGIN TIP PROJECT B-3872

4



STA. 18+00.00 –L– END TIP PROJECT B-3872

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
NOTE : CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
** DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2004 = 225
ADT 2025 = 400
DHV = 10 %
D = 60 %
T = 3 %
**V = 20 mph
TTST = 1% & DUAL = 2%
FUNC CLASS = RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3872 = 0.129 mi
LENGTH STRUCTURE TIP PROJECT B-3872 = 0.023 mi
TOTAL LENGTH OF TIP PROJECT B-3872 = 0.152 mi

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., NC, 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 29, 2004

LETTING DATE: NOVEMBER 15, 2005

G. E. BREW, PE
PROJECT ENGINEER

W. T. BEST
PROJECT DESIGN ENGINEER

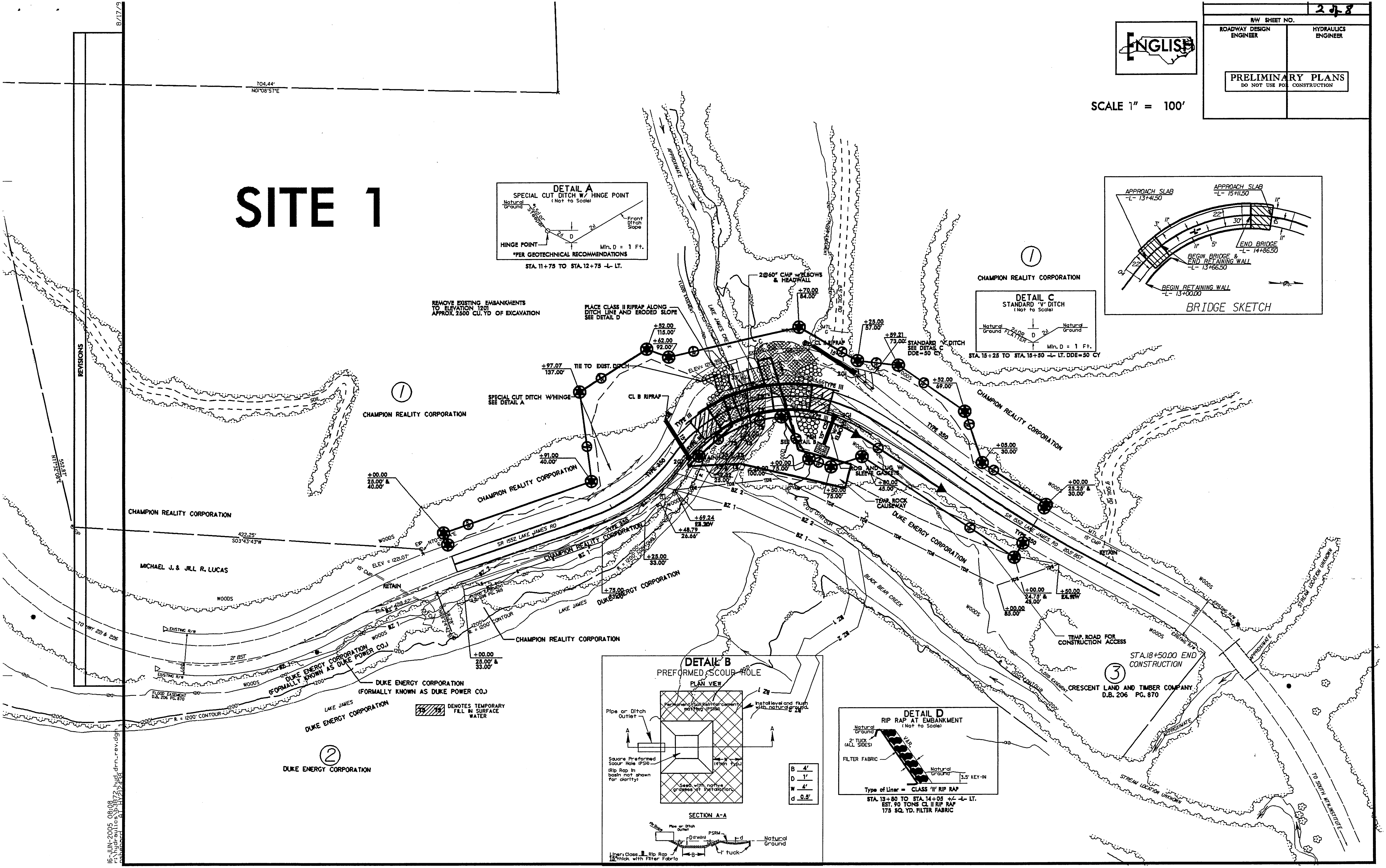
HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

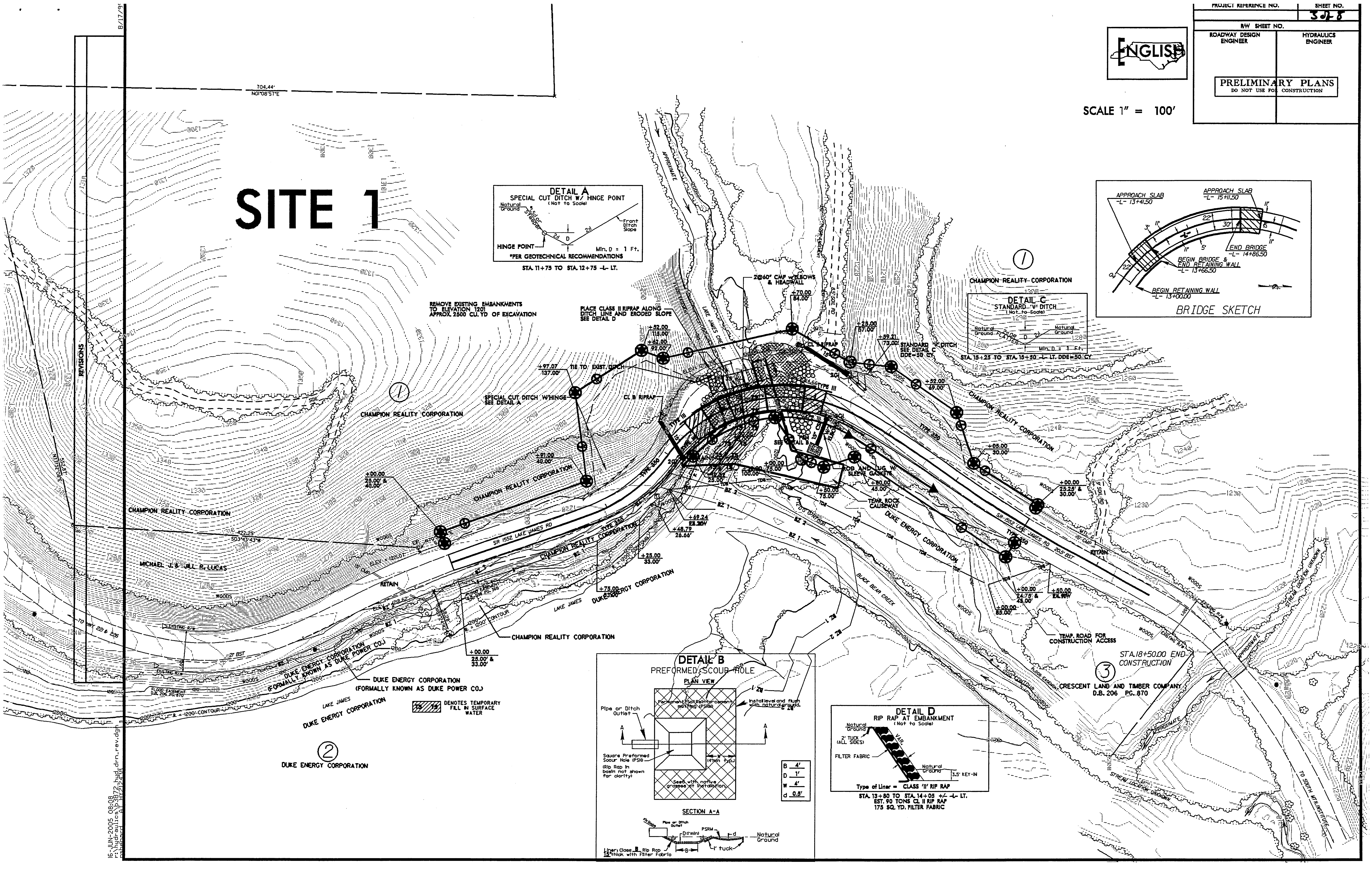
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE

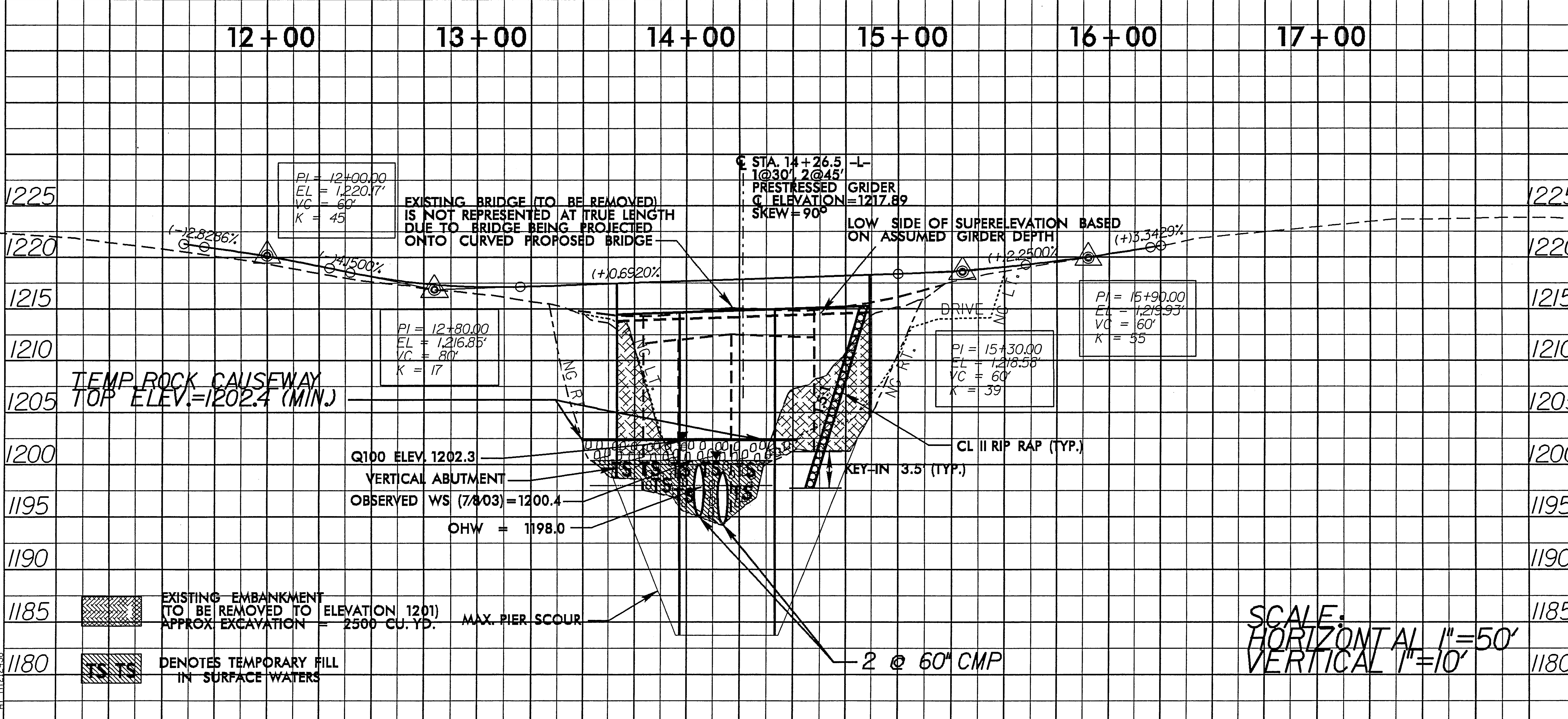
14-DEC-2004 15:57
F:\Hydraulics\PERMITS\b3872_rdy_PERMIT_tsh.dgn
davidwebb AT

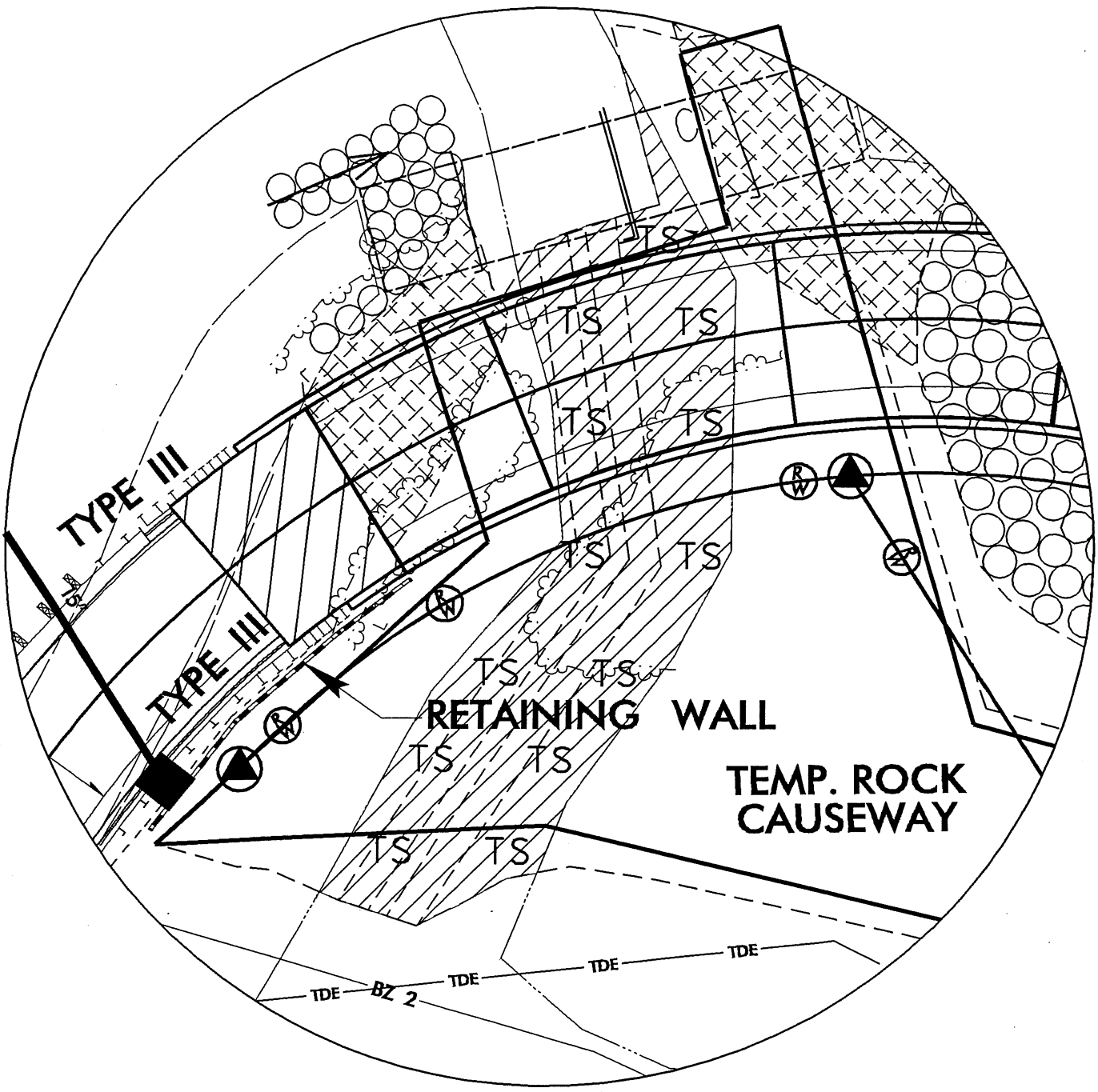


2-8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
ENGLISH
SCALE 1" = 100'
SITE 1
DETAIL A
SPECIAL CUT DITCH W/ HINGE POINT
(Not to Scale)
Natural Ground
HINGE POINT
Front Ditch Slope
Min. D = 1 Ft.
*PER GEOTECHNICAL RECOMMENDATIONS
STA. 11+75 TO STA. 12+75 -L- LT.
DETAIL C
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Min. D = 1 Ft.
STA. 15+25 TO STA. 15+50 -L- LT. DDE=50 CY
BRIDGE SKETCH
APPROACH SLAB -L- 13+41.50
APPROACH SLAB -L- 15+11.50
END BRIDGE -L- 14+86.50
BEGIN BRIDGE & END RETAINING WALL -L- 13+66.50
BEGIN RETAINING WALL -L- 13+00.00
CHAMPION REALITY CORPORATION
REMOVE EXISTING EMBANKMENTS TO ELEVATION 1201 APPROX. 2500 CU. YD OF EXCAVATION
PLACE CLASS II RIPRAP ALONG DITCH LINE AND ERODED SLOPE SEE DETAIL D
2@60" CMP W/ELBOWS & HEADWALL
STANDARD 'V' DITCH SEE DETAIL C DDE=50 CY
TIE TO EXIST. DITCH
SPECIAL CUT DITCH W/HINGE SEE DETAIL A
CL B RIPRAP
ROD AND LUG W/ SLEEVE GASKETS
TEMP. ROCK CAUSEWAY
SR 1552 LAKE JAMES RD
DUKE ENERGY CORPORATION
MICHAEL J. & JILL R. LUCAS
LAKE JAMES
BLACK BEAR CREEK
DUKE ENERGY CORPORATION (FORMALLY KNOWN AS DUKE POWER CO.)
DENOTES TEMPORARY FILL IN SURFACE WATER
TEMP. ROAD FOR CONSTRUCTION ACCESS
STA.18+50.00 END CONSTRUCTION
CRESCENT LAND AND TIMBER COMPANY D.B. 206 PG. 870
STREAM LOCATION UNKNOWN
TO SOUTH MTN. INSTITUTE
TO HWY 221 & 226
REVISIONS
DETAIL B
PREFORMED SCOUR HOLE
PLAN VIEW
Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed with native grasses at installation
B 4'
D 1'
W 4'
d 0.5'
SECTION A-A
Liner: Class B Rip Rap 15" thick with Filter Fabric
Natural Ground
DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)
Natural Ground
2' TUCK (ALL SIDES)
FILTER FABRIC
3.5' KEY-IN
Type of Liner = CLASS 'II' RIP RAP
STA. 13+80 TO STA. 14+05 +/- -L- LT.
EST. 90 TONS CL II RIP RAP
175 SQ. YD. FILTER FABRIC
16-JUN-2005 08:08


PROJECT REFERENCE NO.
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
ENGLISH
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SCALE 1" = 100'
SITE 1
DETAIL A
SPECIAL CUT DITCH W/ HINGE POINT
(Not to Scale)
Natural Ground
HINGE POINT
Front Ditch Slope
Min. D = 1 Ft.
*PER GEOTECHNICAL RECOMMENDATIONS
STA. 11+75 TO STA. 12+75 -L- LT.
REMOVE EXISTING EMBANKMENTS TO ELEVATION 1201 APPROX. 2500 CU. YD OF EXCAVATION
PLACE CLASS II RIPRAP ALONG DITCH LINE AND ERODED SLOPE SEE DETAIL D
2@60" CMP W/ELBOWS & HEADWALL
TIE TO EXIST. DITCH
SPECIAL CUT DITCH W/HINGE SEE DETAIL A
CL B RIPRAP
CHAMPION REALITY CORPORATION
DETAIL C
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Min. D = 1 Ft.
STA. 15+25 TO STA. 15+50 -L- LT. DDE=50 CY
STANDARD 'V' DITCH SEE DETAIL C
APPROACH SLAB -L- 13+41.50
APPROACH SLAB -L- 15+11.50
END BRIDGE -L- 14+86.50
BEGIN BRIDGE & END RETAINING WALL -L- 13+66.50
BEGIN RETAINING WALL -L- 13+00.00
BRIDGE SKETCH
SR 1552 LAKE JAMES RD
MICHAEL J. & JILL R. LUCAS
DUKE ENERGY CORPORATION
DUKE ENERGY CORPORATION (FORMALLY KNOWN AS DUKE POWER CO.)
LAKE JAMES
BLACK BEAR CREEK
TEMP. ROCK CAUSEWAY
ROD AND LUG W/ SLEEVE GASKET
TEMP. ROAD FOR CONSTRUCTION ACCESS
STA.18+50.00 END CONSTRUCTION
CRESCENT LAND AND TIMBER COMPANY D.B. 206 PG. 870
DENOTES TEMPORARY FILL IN SURFACE WATER
DETAIL B
PREFORMED SCOUR HOLE
PLAN VIEW
Permanent Soil Reinforcement matting (PSRM)
Install level and flush with natural ground.
Pipe or Ditch Outlet
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed with native grasses at installation
SECTION A-A
Liner: Class B Rip Rap 12" thick with Filter Fabric
Natural Ground
B 4'
D 1'
W 4'
d 0.5'
DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)
Natural Ground
2' TUCK (ALL SIDES)
FILTER FABRIC
3.5' KEY-IN
Type of Liner = CLASS 'II' RIP RAP
STA. 13+80 TO STA. 14+05 +/- -L- LT.
EST. 90 TONS CL II RIP RAP
175 SQ. YD. FILTER FABRIC
REVISIONS
16-JUN-2005 08:08

PROFILE VIEW





TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

SCALE: 1" = 25'

SITE 1 INSET

NCDOT DIVISION OF HIGHWAYS

B-3872 McDOWELL CO.

SHEET 54 OF 84 12/15/04

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
2	DUKE ENERGY CORPORATION	526 SOUTH CHURCH ST. CHARLOTTE, NC 28202

NCDOT

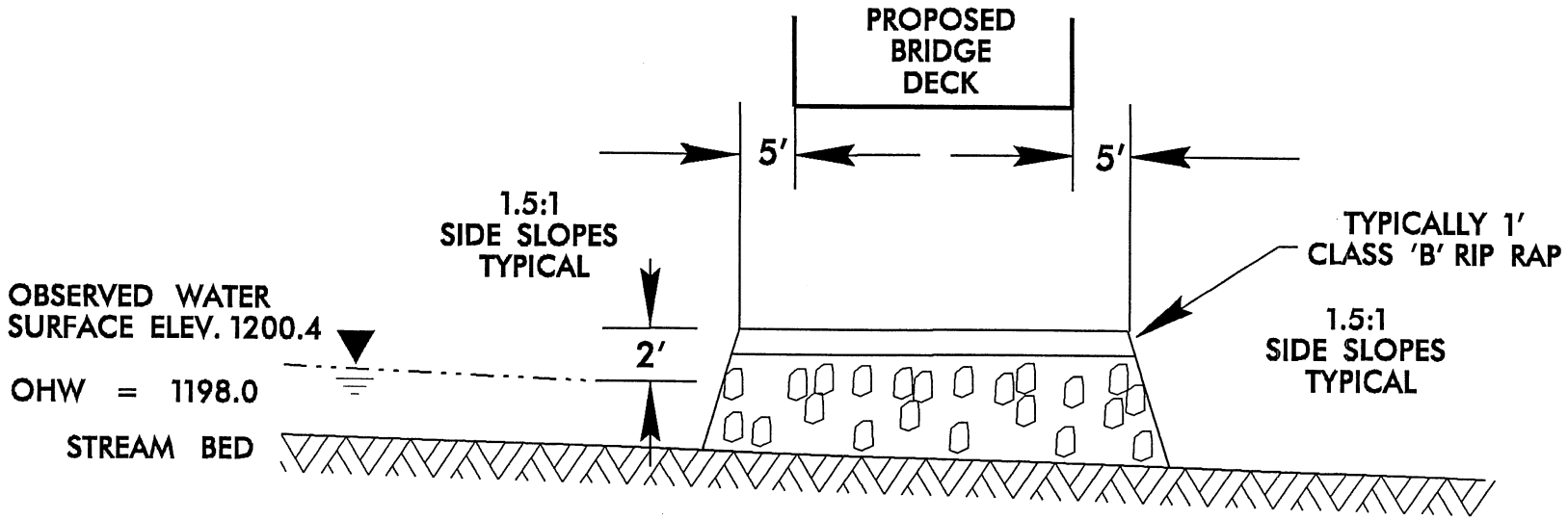
DIVISION OF HIGHWAYS

McDOWELL COUNTY

PROJECT: 33316.1.1

(B-3872)

SITE 1



TYPICAL
SECTION

DETAIL
TEMPORARY CAUSEWAY
CLASS 'II' RIP RAP
(NOT TO SCALE)

NCDOT
DIVISION OF HIGHWAYS

McDOWELL COUNTY

PROJECT: 33316.1.1
(B-3872)

REV. 06/16/05

SHEET 7 4 OF 8 8 12/15/04

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation In Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing (Method III) (ac)	SURFACE WATER IMPACTS: Fill In SW (Natural) (ac)	SURFACE WATER IMPACTS: Fill In SW (Pond) (ac)	SURFACE WATER IMPACTS: Temp. Fill In SW (ac)	SURFACE WATER IMPACTS: Existing Channel Impacted (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	14+37-L- +/-	CAUSEWAY							0.082		
TOTALS:			0	0	0	0	0	0	0.082	0	0

Site 1 has 125' of temp. channel impacts.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

McDOWELL COUNTY
(B-3872)

SHEET 8 OF 8

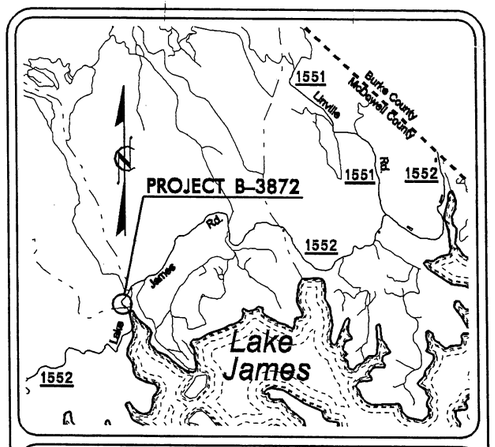
REV. 5/12/2005

Form Revised 3/22/01

09/08/C

TIP PROJECT: B-3872

CONTRACT:



VICINITY MAP

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

McDOWELL COUNTY

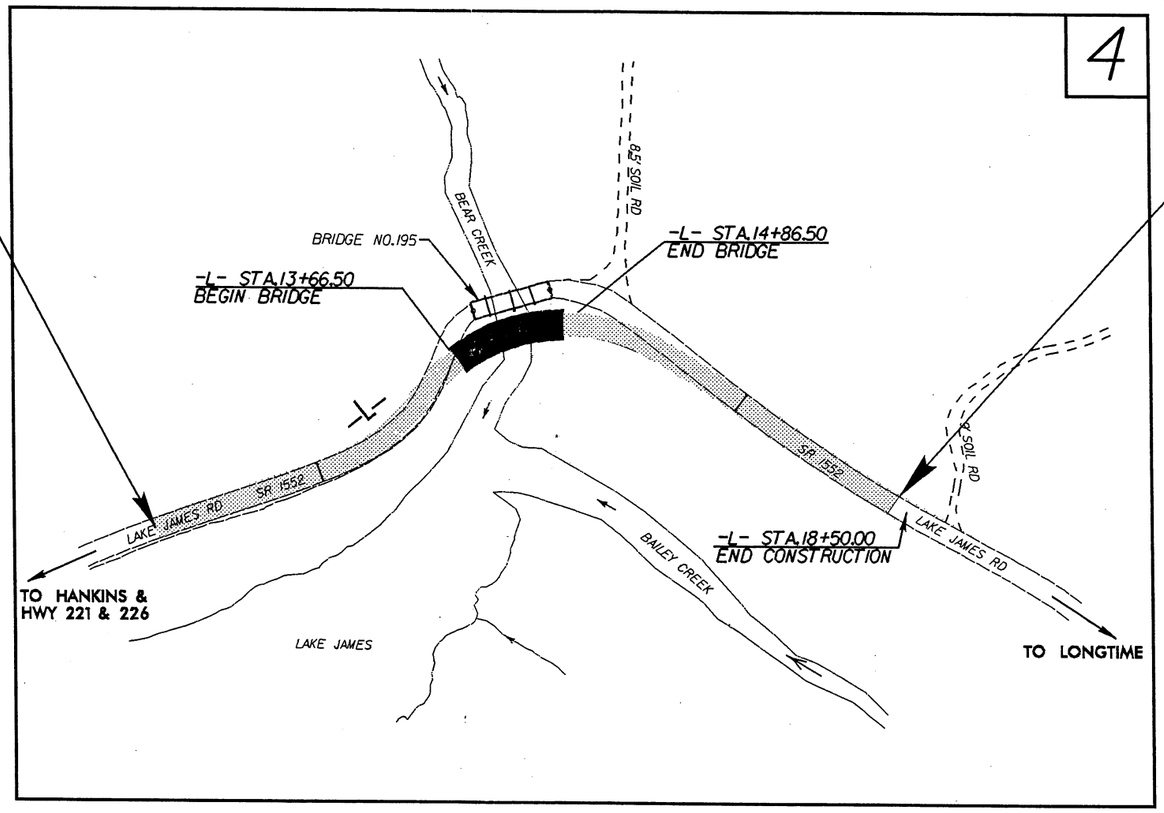
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3872	1	4
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33316.1.1	BRZ-1552(8)	P.E.	

LOCATION: ***BRIDGE No. 195 ON SR 1552 OVER BEAR CREEK***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, AND STRUCTURE***

NAD 83/95

4



STA. 10+00.00 -L- BEGIN TIP PROJECT B-3872

STA. 18+00.00 -L- END TIP PROJECT B-3872

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
NOTE : CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
** DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2004 = 225
ADT 2025 = 400
DHV = 10 %
D = 60 %
T = 3 %
**V = 20 mph
TTST = 1% & DUAL = 2%
FUNC CLASS = RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3872 = 0.129 mi

LENGTH STRUCTURE TIP PROJECT B-3872 = 0.023 mi

TOTAL LENGTH OF TIP PROJECT B-3872 = 0.152 mi

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., NC, 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 29, 2004

LETTING DATE:
NOVEMBER 15, 2005

G. E. BREW, PE
PROJECT ENGINEER

W. T. BEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

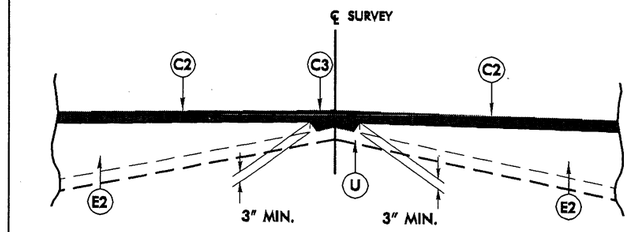
APPROVED
DIVISION ADMINISTRATOR DATE

15-DEC-2004 13:01
R:\Hydraulics\Documents\b3872_rdy_tsh.dgn
davidwebb
AT

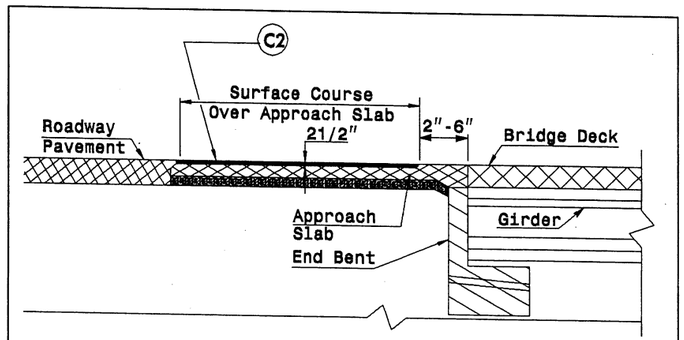
6/2/99

FINAL PAVEMENT SCHEDULE

C1	Prop. Approx. 1¼" Asphalt Concrete Surface Course, Type SF9.5A, at an Average Rate of 110 lbs. per SQ. YD.
C2	Prop. Approx. 2½" Asphalt Concrete Surface Course, Type SF9.5A, at an Average Rate of 110 lbs. per SQ. YD. in each of two layers
C3	Prop. Var. Depth Asphalt Concrete Surface Course, Type SF9.5A, at an Average Rate of 110 lbs. per SQ. YD. per 1" depth to be placed in layers not to exceed 2½" in depth
E1	Prop. Approx. 5½" Asphalt Concrete Base Course, Type B25.0B, at an Average Rate of 114 lbs. per SQ. YD. in each of two layers
E2	Prop. Var. Depth Asphalt Concrete Base Course, Type B25.0B, at an Average Rate of 114 lbs. per SQ. YD. per 1" depth to be placed in layers not greater than 5½" or less than 3" in depth
J	6" AGGREGATE BASE COURSE
R	Shoulder Berm Gutter
T	Earth Material
U	Existing Pavement
W	Variable Depth Asphalt Pavement (see Wedging Detail this sheet)



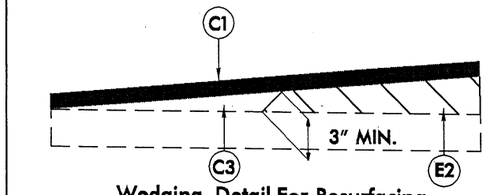
Detail Showing Method of Wedging



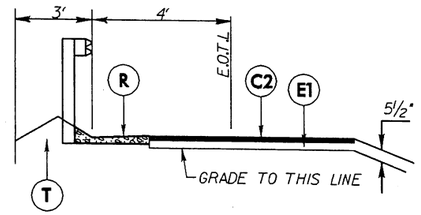
Detail of Asphalt Wearing Surface on Approach Slab

PROJECT REFERENCE NO.	SHEET NO.
B-3872	2 14
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

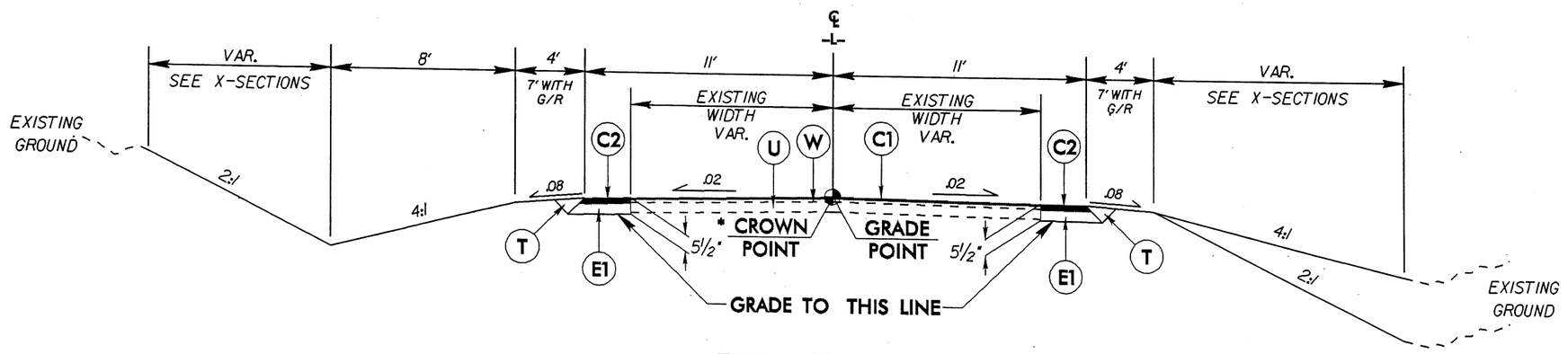


Wedging Detail For Resurfacing



DETAIL SHOWING SHOULDER BERM GUTTER

USE WITH TYPICAL SECTIONS NO.1 & 2
SEE PLANS FOR LOCATION
(SEE STANDARD 862.01 FOR GUARDRAIL PLACEMENT)



TYPICAL SECTION No. 1

USE TYPICAL SECTION No. 1 AT:

-L- FROM STA. 10+00.00 TO STA. 10+50.00, TRANSITION FROM EXISTING TO T.S. NO. 1
-L- FROM STA. 10+50.00 TO STA. 12+00.00
-L- FROM STA. 15+50.00 TO STA. 16+25.00
* -L- FROM STA. 16+25.00 TO STA. 18+00.00, TRANSITION FROM T.S. NO. 1 TO EXISTING

14-DEC-2004 13:38
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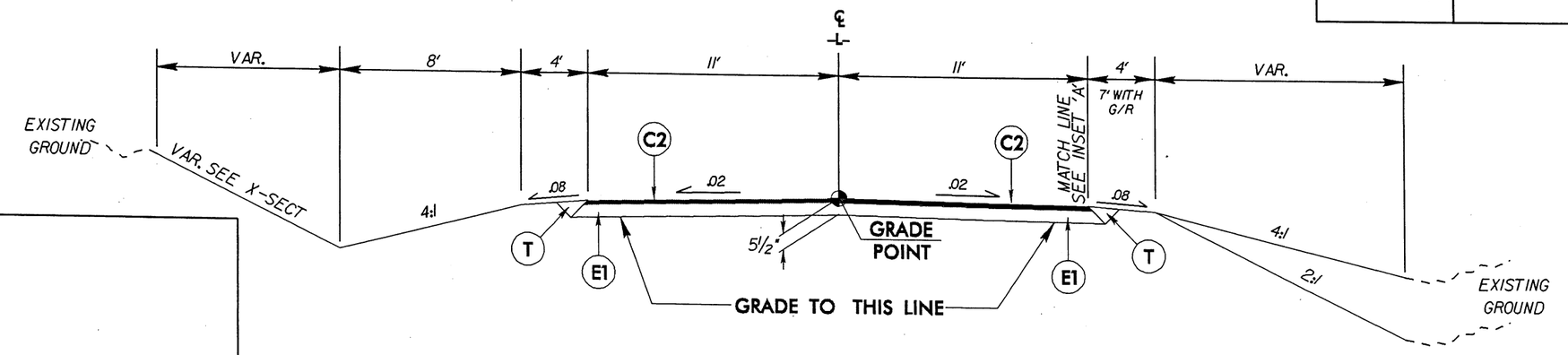
wasmith

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-3872	3 of 4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

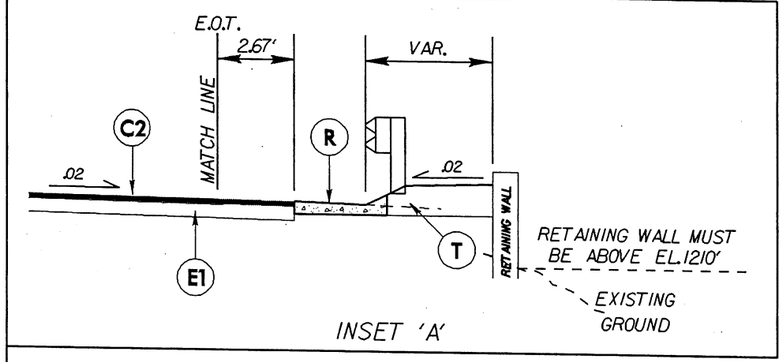
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FINAL PAVEMENT SCHEDULE	
C1	1¼" Type SF9.5A
C2	2½" Type SF9.5A
C3	Var. Depth Type SF9.5A
E1	3" Type B25.0B
E2	Var. Depth Type B25.0B
J	6" ABC
R	Shoulder Berm Gutter
T	Earth Material
U	Existing Pavement
W	Variable Depth Asphalt Pavement

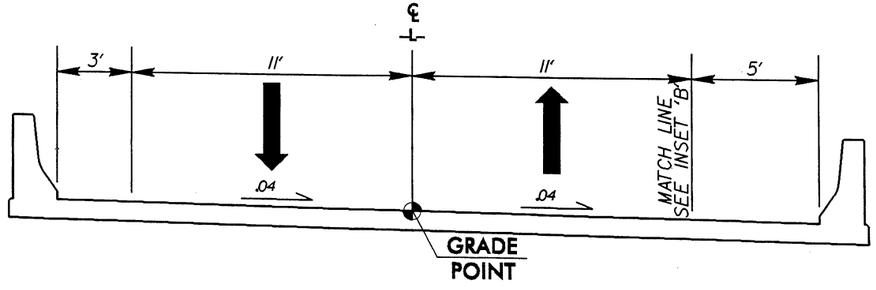


TYPICAL SECTION No. 2

USE TYPICAL SECTION No. 2 AT:
-L- FROM STA.12+00.00 TO STA.13+66.50 (BEGIN BRIDGE)
-L- FROM STA.14+86.50 (END BRIDGE) TO STA.15+50.00
USE INSET 'A' -L- FROM STA.13+00.00 TO STA.13+54.50

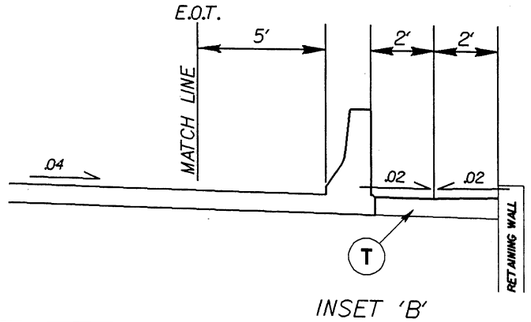


INSET 'A'



TYPICAL SECTION ON STRUCTURE

-L- FROM STA.13+66.50 +/- TO STA.14+86.50 +/-
USE INSET 'B' -L- FROM STA.13+54.50 TO STA.13+66.50



INSET 'B'

14-DEC-2004 13:38
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rsmith

PROJECT REFERENCE NO.	SHEET NO.
B-3872	4 of 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

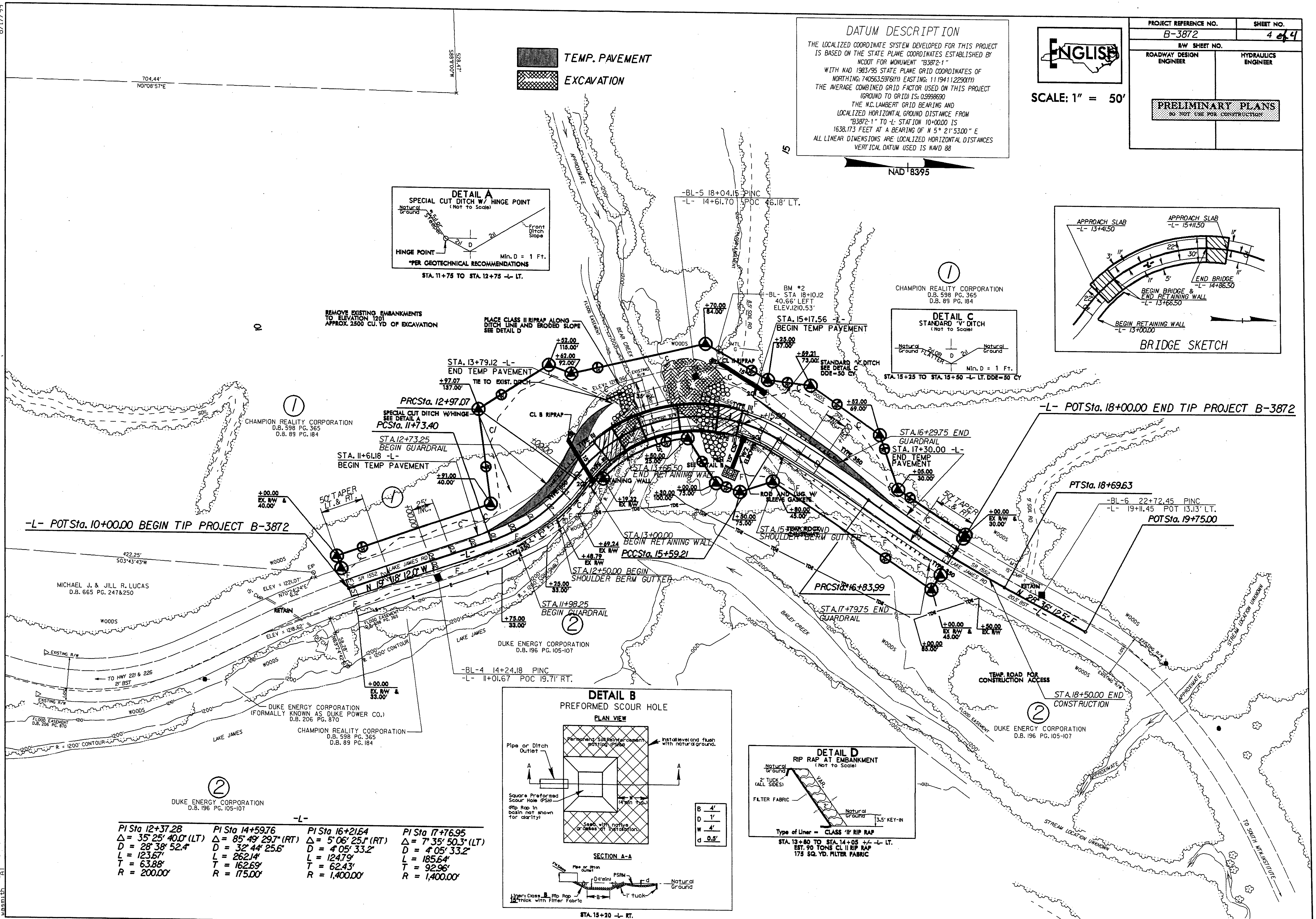
ENGLISH

SCALE: 1" = 50'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3872-1" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 740563.5976(ft) EASTING: 1119411.2290(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998690 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3872-1" TO -L- STATION 10+00.00 IS 1638.173 FEET AT A BEARING OF N 5° 21' 53.00" E ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NAD 83/95



TEMP. PAVEMENT
EXCAVATION
DETAIL A
SPECIAL CUT DITCH W/ HINGE POINT
(Not to Scale)
Natural Ground
HINGE POINT
Front Ditch Slope
Min. D = 1 Ft.
*PER GEOTECHNICAL RECOMMENDATIONS
STA. 11+75 TO STA. 12+75 -L- LT.
DETAIL C
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground
Min. D = 1 Ft.
STA. 15+25 TO STA. 15+50 -L- LT. DDE=50 CY
BRIDGE SKETCH
APPROACH SLAB -L- 13+41.50
APPROACH SLAB -L- 15+11.50
END BRIDGE -L- 14+86.50
BEGIN BRIDGE & END RETAINING WALL -L- 13+66.50
BEGIN RETAINING WALL -L- 13+00.00
CHAMPION REALITY CORPORATION
D.B. 598 PG. 365
D.B. 89 PG. 184
-BL-5 18+04.15 PINC
-L- 14+61.70 POC 46.18' LT.
BM #2
-BL- STA 18+10.12
40.66' LEFT
ELEV. 1210.53'
STA. 15+17.56 -L-
BEGIN TEMP PAVEMENT
REMOVE EXISTING EMBANKMENTS TO ELEVATION 1201
APPROX. 2500 CU. YD OF EXCAVATION
PLACE CLASS II RIPRAP ALONG DITCH LINE AND ERODED SLOPE SEE DETAIL D
STA. 13+79.12 -L-
END TEMP PAVEMENT
PRCSta. 12+97.07
PCSta. 11+73.40
STA. 12+73.25
BEGIN GUARDRAIL
STA. 11+61.18 -L-
BEGIN TEMP PAVEMENT
-L- POTSta. 10+00.00 BEGIN TIP PROJECT B-3872
-L- POTSta. 18+00.00 END TIP PROJECT B-3872
STA. 16+29.75 END GUARDRAIL
STA. 17+30.00 -L- END TEMP PAVEMENT
PTSta. 18+69.63
-BL-6 22+72.45 PINC
-L- 19+11.45 POT 13.13' LT.
POTSta. 19+75.00
STA. 13+66.50 END RETAINING WALL
STA. 13+00.00 BEGIN RETAINING WALL
PCCSta. 15+59.21
STA. 12+50.00 BEGIN SHOULDER BERM GUTTER
STA. 11+98.25 BEGIN GUARDRAIL
PRCSta. 16+83.99
STA. 17+79.75 END GUARDRAIL
ROD AND LUG W/ SLEEVE GASKETS
MICHAEL J. & JILL R. LUCAS
D.B. 665 PG. 247&250
DUKE ENERGY CORPORATION
D.B. 196 PG. 105-107
-BL-4 14+24.18 PINC
-L- 11+01.67 POC 19.71' RT.
DUKE ENERGY CORPORATION
(FORMALLY KNOWN AS DUKE POWER CO.)
D.B. 206 PG. 870
CHAMPION REALITY CORPORATION
D.B. 598 PG. 365
D.B. 89 PG. 184
TEMP. ROAD FOR CONSTRUCTION ACCESS
STA. 18+50.00 END CONSTRUCTION
LAKE JAMES
BEAR CREEK
BAILEY CREEK
TO HWY 221 & 226
TO SOUTH MTN INSTITUTE
STREAM LOCATION UNKNOWN
DETAIL B
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
STA. 15+20 -L- RT.
DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)
FILTER FABRIC
Type of Liner = CLASS 'II' RIP RAP
STA. 13+80 TO STA. 14+05 +/- -L- LT.
EST. 90 TONS CL II RIP RAP
175 SQ. YD. FILTER FABRIC

-L-

PI Sta 12+37.28	PI Sta 14+59.76	PI Sta 16+21.64	PI Sta 17+76.95
Δ = 35° 25' 40.0" (LT)	Δ = 85° 49' 29.7" (RT)	Δ = 5° 06' 25.1" (RT)	Δ = 7° 35' 50.3" (LT)
D = 28° 38' 52.4"	D = 32° 44' 25.6"	D = 4° 05' 33.2"	D = 4° 05' 33.2"
L = 123.67'	L = 262.14'	L = 124.79'	L = 185.64'
T = 63.88'	T = 162.69'	T = 62.43'	T = 92.96'
R = 200.00'	R = 175.00'	R = 1,400.00'	R = 1,400.00'

8/17/99

14-DEC-2004 13:39
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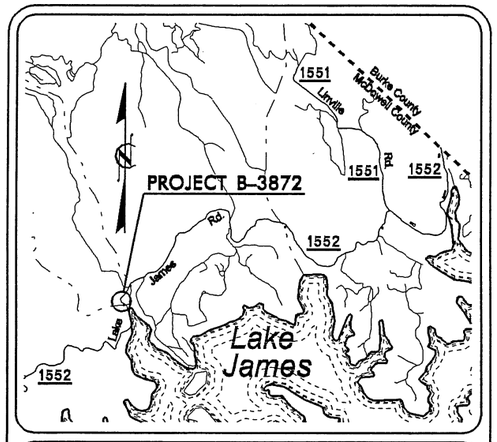
09/08/99

TIP PROJECT: B-3872

CONTRACT:



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

McDOWELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3872	1	7

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33316.1.1	BRZ-1552(8)	P.E.

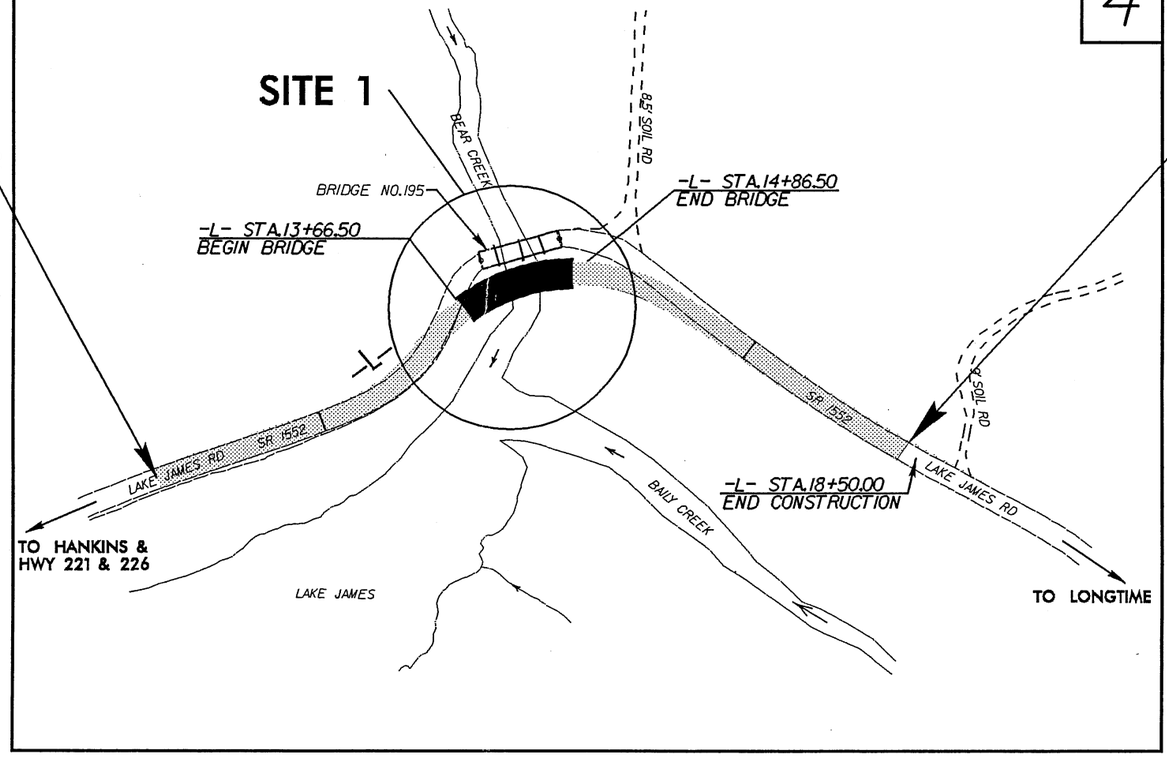
LOCATION: ***BRIDGE No. 195 ON SR 1552 OVER BEAR CREEK***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, AND STRUCTURE***

BUFFER IMPACT SHEETS

NAD 83/95

4



STA. 10+00.00 -L- BEGIN TIP PROJECT B-3872

STA. 18+00.00 -L- END TIP PROJECT B-3872

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
NOTE : CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
** DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2004 = 225
ADT 2025 = 400
DHV = 10 %
D = 60 %
T = 3 %
**V = 20 mph
TTST = 1% & DUAL = 2%
FUNC CLASS = RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-3872 = 0.129 mi

LENGTH STRUCTURE TIP PROJECT B-3872 = 0.023 mi

TOTAL LENGTH OF TIP PROJECT B-3872 = 0.152 mi

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., NC, 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 29, 2004

LETTING DATE:
NOVEMBER 15, 2005

G. E. BREW, PE
PROJECT ENGINEER

W. T. BEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

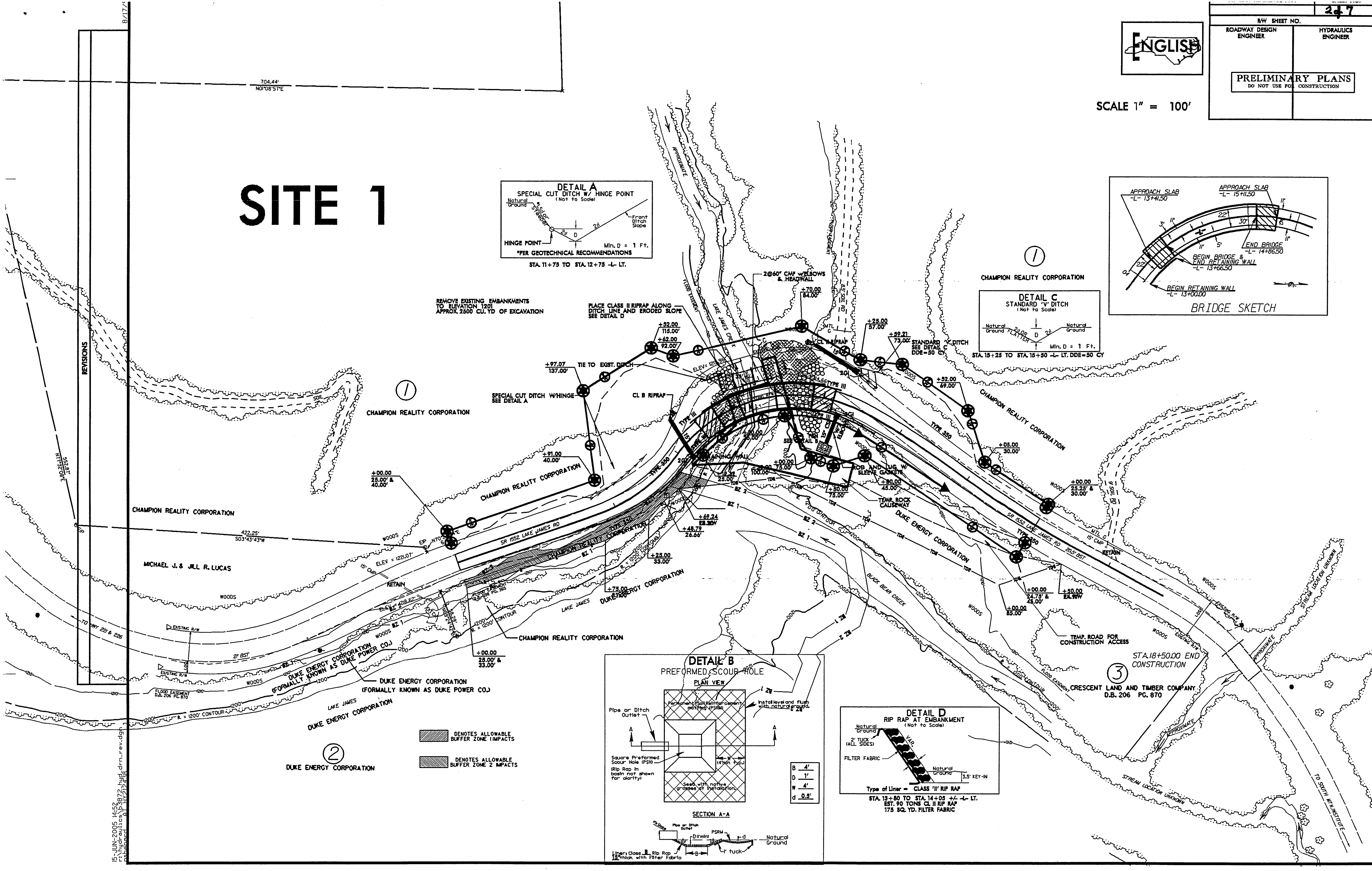
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

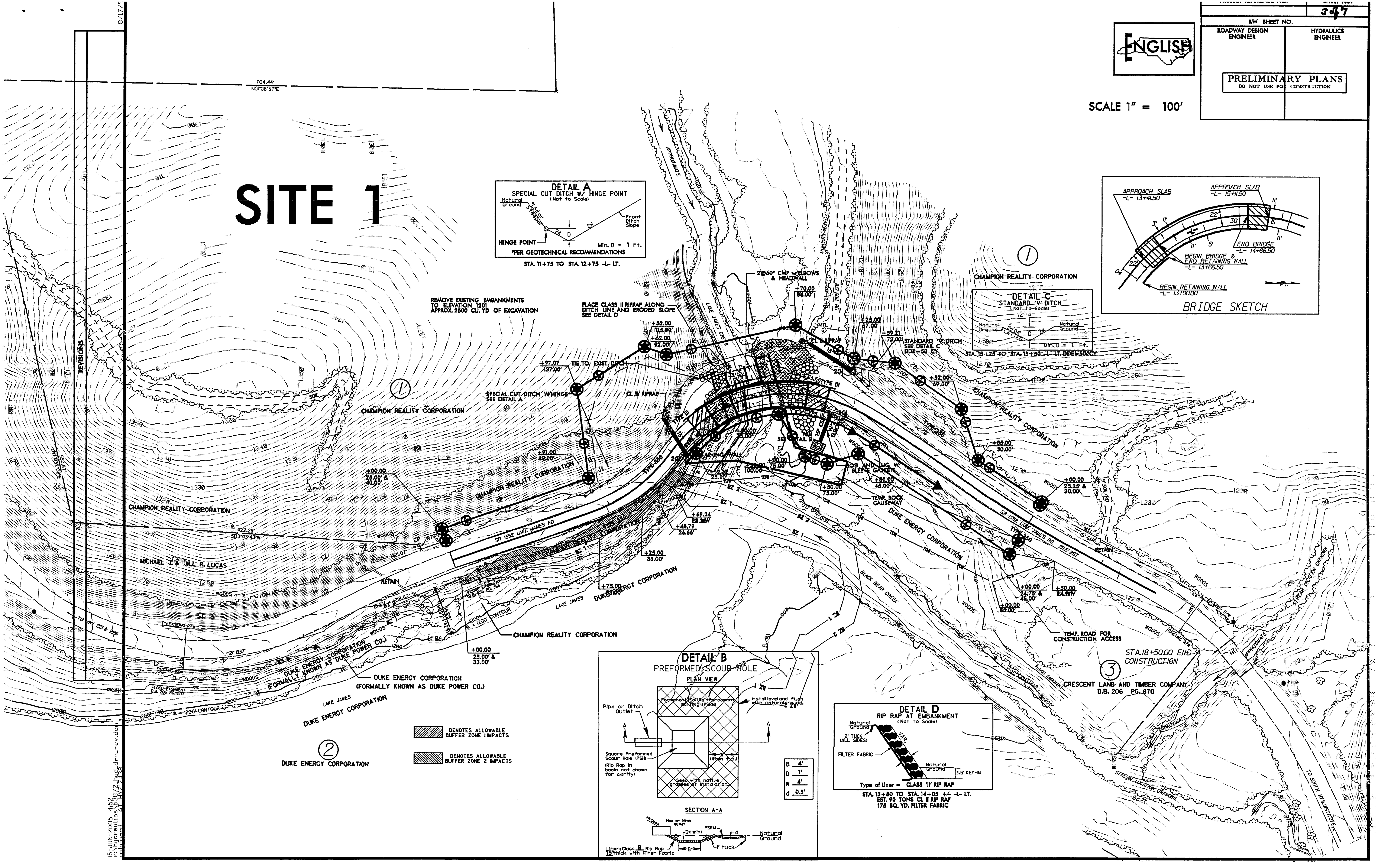
STATE DESIGN ENGINEER P.E.

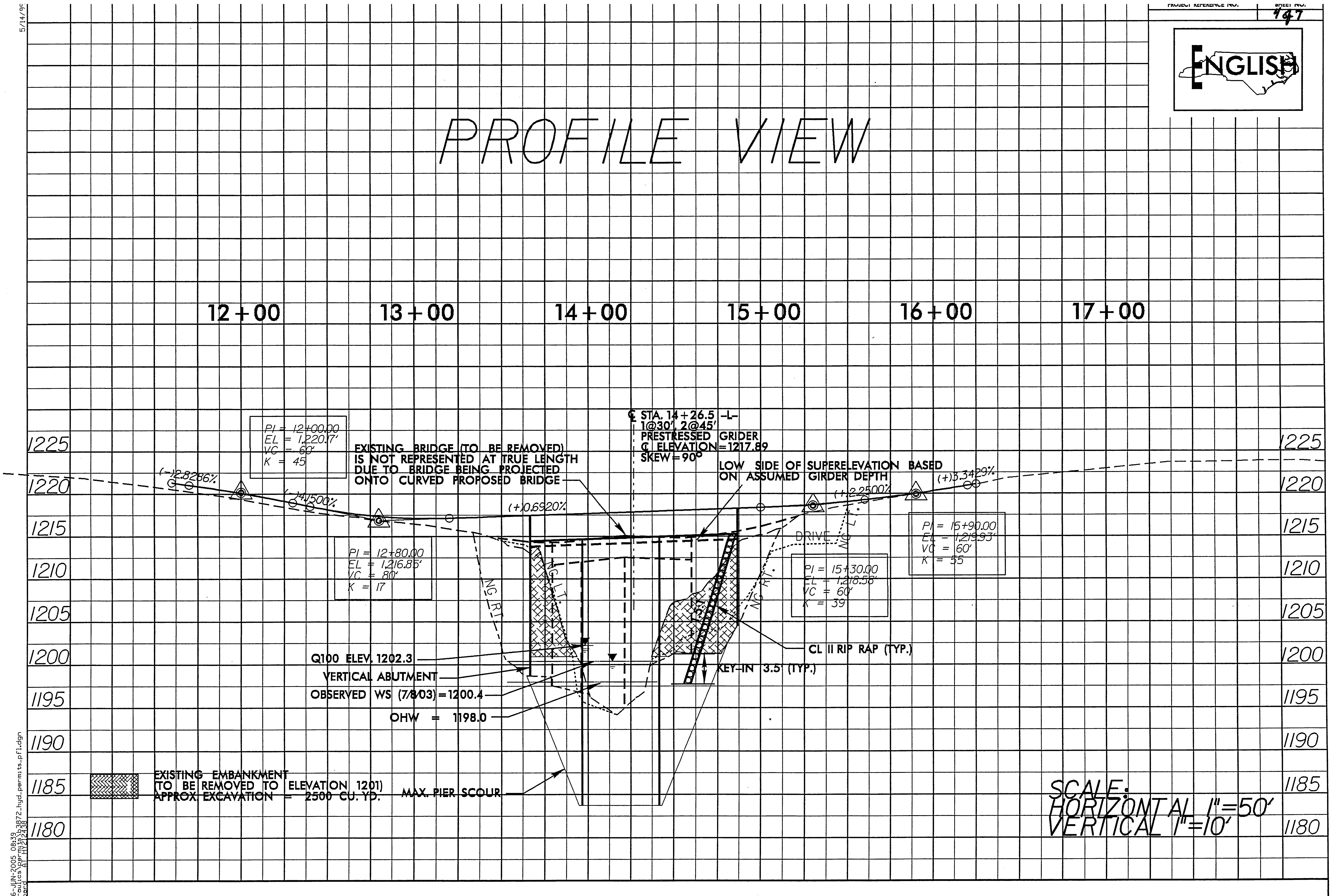
DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

14-DEC-2004 13:00
R:\Hydraulics\PERMITS\b3872_ray_PERMIT_tsh.dgn
davidwebb AT


SITE 1
ENGLISH
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SCALE 1" = 100'
REVISIONS
DETAIL A
SPECIAL CUT DITCH W/ HINGE POINT
(Not to Scale)
HINGE POINT
Min. D = 1 Ft.
*PER GEOTECHNICAL RECOMMENDATIONS
STA. 11+75 TO STA. 12+75 -L- LT.
DETAIL C
STANDARD 'V' DITCH
(Not to Scale)
Min. D = 1 Ft.
STA. 15+25 TO STA. 15+50 -L- LT. DDE=50 CY
BRIDGE SKETCH
APPROACH SLAB -L- 13+41.50
APPROACH SLAB -L- 15+11.50
END BRIDGE -L- 14+86.50
BEGIN BRIDGE & END RETAINING WALL -L- 13+66.50
BEGIN RETAINING WALL -L- 13+00.00
CHAMPION REALITY CORPORATION
REMOVE EXISTING EMBANKMENTS TO ELEVATION 1201 APPROX. 2500 CU. YD OF EXCAVATION
PLACE CLASS II RIPRAP ALONG DITCH LINE AND ERODED SLOPE SEE DETAIL D
2@60" CMP W/ ELBOWS & HEADWALL
SPECIAL CUT DITCH W/HINGE SEE DETAIL A
TIE TO EXIST. DITCH
CL B RIPRAP
SR 1552 LAKE JAMES RD
MICHAEL J. & JILL R. LUCAS
DUKE ENERGY CORPORATION
DUKE ENERGY CORPORATION (FORMALLY KNOWN AS DUKE POWER CO.)
LAKE JAMES
BLACK BEAR CREEK
TEMP. ROCK CAUSEWAY
TEMP. ROAD FOR CONSTRUCTION ACCESS
STA.18+50.00 END CONSTRUCTION
CRESCENT LAND AND TIMBER COMPANY D.B. 206 PG. 870
TO SOUTH MTN. INSTITUTE
TO HWY 221 & 226
DENOTES ALLOWABLE BUFFER ZONE 1 IMPACTS
DENOTES ALLOWABLE BUFFER ZONE 2 IMPACTS
DETAIL B
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)
FILTER FABRIC
Type of Liner = CLASS 'II' RIP RAP
STA. 13+80 TO STA. 14+05 +/- -L- LT.
EST. 90 TONS CL II RIP RAP
175 SQ. YD. FILTER FABRIC
15-JUN-2005 14:52


R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
ENGLISH
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SCALE 1" = 100'
SITE 1
DETAIL A
SPECIAL CUT DITCH W/ HINGE POINT
(Not to Scale)
HINGE POINT
Min. D = 1 Ft.
*PER GEOTECHNICAL RECOMMENDATIONS
STA. 11+75 TO STA. 12+75 -L- LT.
REMOVE EXISTING EMBANKMENTS TO ELEVATION 1201
APPROX. 2500 CU. YD OF EXCAVATION
PLACE CLASS II RIPRAP ALONG DITCH LINE AND ERODED SLOPE
SEE DETAIL D
2@60" CMP W/ELBOWS & HEADWALL
CHAMPION REALITY CORPORATION
DETAIL C
STANDARD "V" DITCH
(Not to Scale)
STA. 15+25 TO STA. 15+50 -L- LT. DDE=50 CY
BRIDGE SKETCH
APPROACH SLAB -L- 13+41.50
APPROACH SLAB -L- 15+11.50
END BRIDGE -L- 14+86.50
BEGIN BRIDGE & END RETAINING WALL -L- 13+66.50
BEGIN RETAINING WALL -L- 13+00.00
SPECIAL CUT DITCH W/HINGE SEE DETAIL A
TIE TO EXIST. DITCH
CL.B RIPRAP
SR 1552 LAKE JAMES RD
MICHAEL J. & JILL R. LUCAS
DUKE ENERGY CORPORATION
DUKE ENERGY CORPORATION (FORMALLY KNOWN AS DUKE POWER CO.)
LAKE JAMES
BLACK BEAR CREEK
TEMP. ROCK CAUSEWAY
ROD AND LUG W/ SLEEVE GASKETS
TEMP. ROAD FOR CONSTRUCTION ACCESS
STA.18+50.00 END CONSTRUCTION
CRESCENT LAND AND TIMBER COMPANY
D.B. 206 PG. 870
DENOTES ALLOWABLE BUFFER ZONE 1 IMPACTS
DENOTES ALLOWABLE BUFFER ZONE 2 IMPACTS
DETAIL B
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
DETAIL D
RIP RAP AT EMBANKMENT
(Not to Scale)
FILTER FABRIC
Type of Liner = CLASS 'II' RIP RAP
STA. 13+80 TO STA. 14+05 +/- -L- LT.
EST. 90 TONS CL II RIP RAP
175 SQ. YD. FILTER FABRIC
REVISIONS
15-JUN-2005 14:52



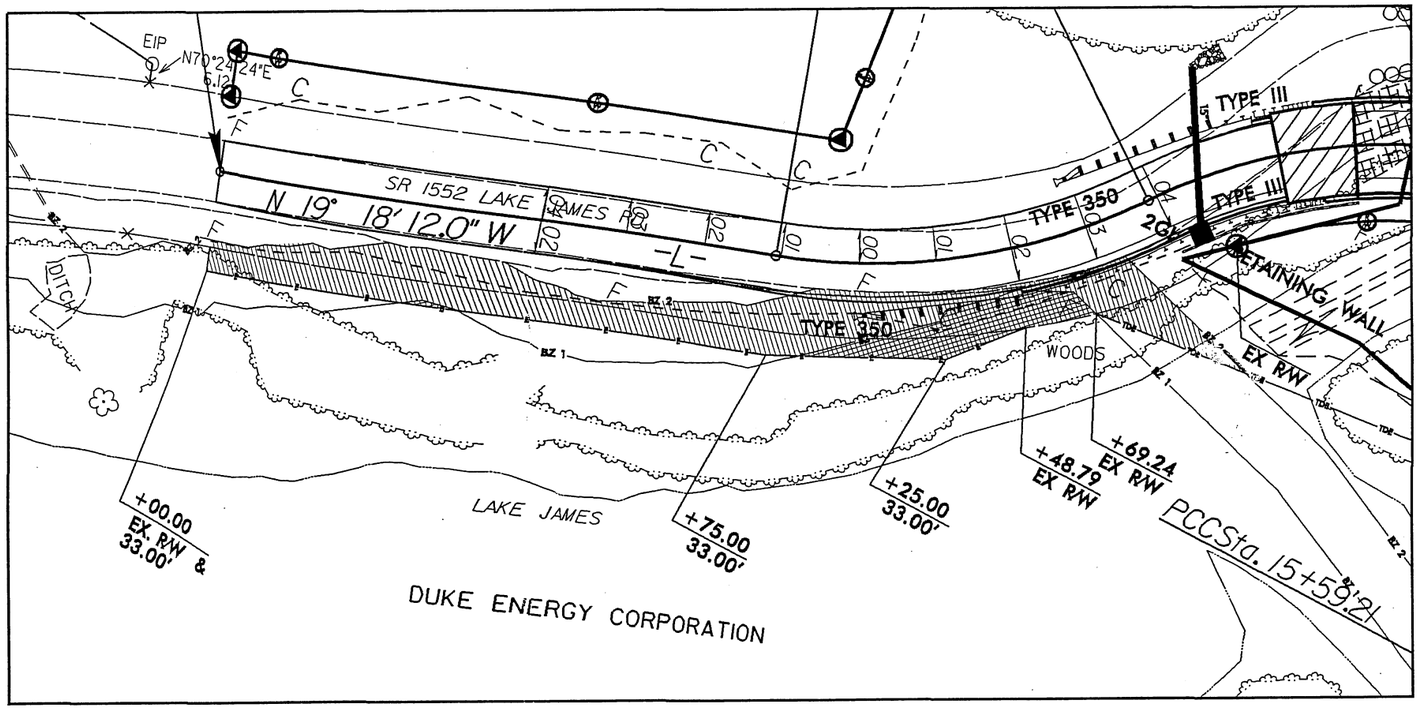
PROJECT REFERENCE NO.
SHEET NO.
147
ENGLISH
PROFILE VIEW
12+00
13+00
14+00
15+00
16+00
17+00
1225
1220
1215
1210
1205
1200
1195
1190
1185
1180
PI = 12+00.00
EL = 1,220.17'
VC = 60'
K = 45
(-)2.8286%
(-)4.1500%
PI = 12+80.00
EL = 1,216.85'
VC = 80'
K = 17
(+)0.6920%
EXISTING BRIDGE (TO BE REMOVED) IS NOT REPRESENTED AT TRUE LENGTH DUE TO BRIDGE BEING PROJECTED ONTO CURVED PROPOSED BRIDGE
℄ STA. 14+26.5 -L-
1@30', 2@45'
PRESTRESSED GRIDER
℄ ELEVATION=1217.89
SKEW=90°
LOW SIDE OF SUPERELEVATION BASED ON ASSUMED GIRDER DEPTH
(+)2.2500%
(+)3.3429%
PI = 15+90.00
EL = 1,219.93'
VC = 60'
K = 55
PI = 15+30.00
EL = 1,218.56'
VC = 60'
K = 39
DRIVE
NG LT.
NG RT.
CL II RIP RAP (TYP.)
KEY-IN 3.5' (TYP.)
Q100 ELEV. 1202.3
VERTICAL ABUTMENT
OBSERVED WS (7/8/03)=1200.4
OHW = 1198.0
EXISTING EMBANKMENT (TO BE REMOVED TO ELEVATION 1201) APPROX. EXCAVATION = 2500 CU. YD.
MAX. PIER SCOUR
SCALE:
HORIZONTAL 1"=50'
VERTICAL 1"=10'
5/14/99
16-JUN-2005 08:39
hydraulics\permits\b3872_hyd_permits_pfl.dgn

8/17/98

SCALE: 1" = 50'

B-3872	457
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITE 1 INSET



——BZ1——BZ1—— DENOTES 30' LATERAL OFFSET FROM 1200' CONTOUR OF LAKE JAMES

——BZ2——BZ2—— DENOTES 50' LATERAL OFFSET FROM 1200' CONTOUR OF LAKE JAMES

DENOTES MITIGABLE BUFFER ZONE 1 IMPACTS

DENOTES MITIGABLE BUFFER ZONE 2 IMPACTS

NCDOT DIVISION OF HIGHWAYS

B-3872 McDOWELL CO.

SHEET 1 OF 3 12/15/04

15-DEC-2004 14:24
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dayvidelli
A1

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
1	CHAMPION REALTY CORPORATION	
2	DUKE ENERGY CORPORATION	526 SOUTH CHURCH ST. CHARLOTTE, NC 28202
1*	CHAMPION REALTY CORPORATION IS NOW INTERNATIONAL PAPER REALTY CORPORATION	CARMEL EXECUTIVE PARK SUITE 140 7400 EXECUTIVE PARK DR. CHARLOTTE, NC 28226

NCDOT

DIVISION OF HIGHWAYS

McDOWELL COUNTY

PROJECT: 33316.1.1

(B-3872)

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BUFFER IMPACTS SUMMARY

			IMPACT								BUFFER REPLACEMENT	
			TYPE		ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	LATERAL	-L- Sta 10+00+/-.										
	FILL	-L- Sta 13+00+/-		X				910.3	4186.6	5096.9		
TOTAL:					0.0	0.0	0.0	910.3	4186.6	5096.9		

There is 300 ft. of linear buffer zone impacts

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

McDOWELL COUNTY
(B-3872)

Rev. 06/16/05
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